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SOME EARLY AUSTRALIAN DOCTORS.[1]

By E. SANDFORD JACKSON, M.B., B.S. (Melbourne), *Brisbane.*

CAPTAIN ARTHUR PHILLIP on October 12, 1786, received his first commission—to organize a fleet for the purpose of taking to Botany Bay some hundreds of convicts and a guard sufficient to control and protect them.

On October 24 a young man named John White received his commission as Surgeon to the Fleet. He had been surgeon in the Royal Navy on a ship called the *Irresistible* and had been commended to Under-Secretary Nepean by Sir A. S. Hamond. The latter described him as "a young man of much credit in his profession and of that sort of disposition and demeanour that rendered him a very proper person for such an establishment."

White's commission virtually made him Chief Surgeon to the Fleet and so to the settlement that was to be formed in New South Wales. His salary was not exorbitant. It was £182 10s. *per annum.* A very slight calculation, of course, will reveal the fact that this "young man of much credit in his profession" as a reward for the very responsible position, had to content himself with ten shillings a day.

He had under him at first three surgeon's mates whose salaries were half his own—five shillings a day. There is in "The Historical Records of New South Wales" a letter from Surgeon Worgan to Governor Phillip, which seems to indicate that the surgeons were expected to supply medicines out of their pay. Worgan says: "From the high price of the drug (Peruvian bark), surgeons cannot afford the vast quantity required to do justice to the men without wronging themselves." He begged Phillip to move for an adequate supply of Peruvian bark. I should think so! But at least these doctors had no rents to pay and no motor cars to keep up!

Though the first estimate of the probable cost of the medical service to the Fleet made provision for the salaries of only three surgeon's mates, there were more than three before it left the home shores. So far as I have been able with the literature at my disposal to find out, the following names are those of the doctors who came out with the ships of the First Fleet:

[1] Read at a meeting of the Queensland Branch of the British Medical Association on November 11, 1925.

1. Chief Surgeon John White was on the *Charlotte*.

2. George Bouchet Worgan was Surgeon to the *Sirius*.

3. Thomas Jamieson was Assistant Surgeon on the *Sirius*.

4. Arthur Bowes and John Turnpenny Altree served on the *Lady Penrhyn*.

5. Denis Considen was on the *Scarborough*.

6. William Balmain was on the *Alexander*.

7. Mr. Callum (or Callam), Surgeon on the *Supply*.

8. Thomas Arndell was on the *Friendship*.

The *Prince of Wales* probably had a surgeon. I have not yet found out who he was.

There was no surgeon on the *Borrowdale*, the *Golden Grove* or the *Fishburn*. These were store-ships and carried no convicts.

How well these gentlemen performed their duties may be gathered from the fact that on the voyage to Australia there were only thirty-six men, four women and five children who died amongst the convicts, and three deaths amongst the marines (a man, a woman and a child) and no deaths amongst the crews on the eleven ships. By September 28, 1788, there had been the following deaths at Sydney Cove: Among the marines, three men and two children; among the convicts, twenty-six men, three of whom were killed by the natives, twelve women and nine children; a total after landing of fifty-two, or since leaving England of one hundred. In addition eleven men and one woman were missing and four had been executed. These were good results considering the circumstances under which the doctors worked and the material they had to work on. The constitutions of their convict patients were much debilitated even before they were embarked.

How much the good results with regard to the mortality of the First Fleet were due to its doctors may be in some measure gauged by consideration of what happened on board those ships after they reached Port Jackson, discharged their cargoes and went their various ways. All doctors, except those on the *Sirius* and the *Supply*, remained in Port Jackson to look after the convicts. They were the servants of the British Government and when the ship's charters with that Government came to an end, the doctors went on with their service under the British Government. The ships went off without doctors. I have traced their subsequent history. Seven of them in their voyages from Port Jackson were so disabled by sickness, chiefly scurvy, that they had to be assisted into port or were unable to hoist a sail or lift an anchor.

The *Lady Penrhyn* left Port Jackson on May 5, 1788 and went to Tahiti. She was so disabled by scurvy on July 9 that she was unable to risk coming to an anchor at an island at which she did not intend to remain, lest she should be unable to lift the anchor. She, by the way, had *Sauerkraut* on board which for a considerable time the scurvy crew refused to eat!

The *Scarborough* sailed from Port Jackson on May 6, 1788, and went to Lord Howe's Island. Here she joined the *Charlotte* and together the two ships sailed up the Pacific till they reached Tinian in the Ladrones, fairly disabled with scurvy. Fifteen seamen were laid up with it on the *Scarborough* and the rest of the crew were so weak that they could scarcely work the ship. Leaving this spot a little later, both ships during a gale had to cut cable to get away.

The *Friendship* and the *Alexander* left Port Jackson on July 14, 1788, bound for Batavia under Lieutenant John Shortland. They sailed together up the Pacific through the Solomon Islands and round New Ireland. Nearing the equator in August they began to suffer from scurvy.

About the middle of September another disaster was added to their misfortunes—intermittent fever, to wit. (They had landed on one of the islands and had probably picked up that infection in doing so.) There was no cinchona and no doctor. Bearing west they reached the neighbourhood of Borneo and there they were so disabled and the number of efficients in the two crews was so reduced that it was decided to scuttle the *Friendship* and try to make a sufficient crew out of those on both ships who were fit for duty. The *Friendship* was accordingly scuttled on October 28, 1788. A few weeks afterwards the remainder of this expedition reached the roads at Batavia, limping so badly that it had to be helped into the anchorage by the authorities of the port. They could not even lift their own anchor!

The *Borrowdale* and the *Prince of Wales*, sailing from Port Jackson on July 16, 1788, went round Cape Horn and were helped in a similar fashion to limp into the Port of Rio de Janeiro. Scurvy again!

On the *Fishburn* and the *Golden Grove* in their journeying after leaving Port Jackson on November 19, 1788, I have been able to find no account, except that they sailed round the Horn and duly arrived at Deptford on May 15, 1799.

So at least seven of those nine ships came to grief with scurvy. It is a significant fact that practically all the deaths on the way out from England had been those of convicts or marines. There were no deaths among the crews. All the disasters of sickness and death after the ships left Port Jackson, however, occurred among the men of the crews. It is well to remember that the crews before starting had all been in Port Jackson for five or six months. There they got neither fresh meat nor vegetables in sufficiency. It is not to be supposed that these disasters were due merely to the absence of doctors, but it seems fairly certain that the ships would have been equipped medically if doctors had been in charge and that they would have insisted on more frequent landing on the islands for the obtaining of refreshment.

The commanders of these ships do not seem to have appreciated at their full value the experience and instructions of Captain Cook in combating scurvy. What Captain Cook had already done in

his voyages in the Pacific without mortality from scurvy, might have been done by each of these ships. Captain Cook would have landed more frequently.

The doctors, when they remained in Port Jackson to look after the convicts, were to find that they had taken on a very big contract. The number of sick people soon became a tremendous proportion of the total population. In those first few days after landing the settlement at Sydney Cove contained 1,030 souls. Tents had been erected ashore for the sick, in which they were received on landing.

There had been no cases of scurvy to speak of during the passage of the Fleet from the old country. It will be remembered that fair quantities of fresh foods and some antiscorbutics had been possible of attainment at Rio de Janeiro and at the Cape of Good Hope. But now scurvy put in its appearance and soon there was added a considerable number of cases of dysentery.

Every attempt was made to check scurvy by procuring for the patients wild celery, spinach and parsley which fortunately grew in great abundance. These esculents were used not only by the sick but by those who were well. The latter "were very glad to introduce them into their messes and found them pleasant as well as wholesome additions to the rations and provisions" (Collins).

Early in March, 1788, Governor Phillip with some of his officers and men went by water to survey the harbour at Broken Bay. The weather was very unfavourable and some of the party returned with dysentery. The Governor found when he returned to Port Jackson that the weather there had been equally severe and there were upwards of two hundred patients under the surgeons' care. It seems clear that his impression was that dysentery was somehow dependent chiefly on the state of the weather.

Up to this time the care of the sick had been undertaken under canvas, but a more permanent building was now, it was thought, an urgent matter and one was at once put in hand. Under its roof there was to be a dispensary and two wards—one for convicts and one for marines. It was put up on the west side of Sydney Cove, considerably inshore of Observatory Hill.

Writing of this time Surgeon White in his journal says (page 122):

> A laboratory and sick tents were erected and I am sorry to say were soon filled with patients afflicted with the true camp dysentery and the scurvy. More pitiable objects were, perhaps, never seen. Not a comfort or convenience could be got for them besides the very few we had with us. His Excellency, seeing the state these poor objects were in, ordered a piece of ground to be enclosed for the purpose of raising vegetables for them. The seeds that were sown upon this occasion on first appearing above ground looked promising and well, but soon after withered away, which was not indeed extraordinary as they were not sown at a proper season of the year.

So any hopes they may have had of obtaining fresh garden vegetables at an early date were withered like the plants they tried to cultivate. As for fresh animal food, such as mutton or beef, that too was a long way off. Such livestock as had been landed from the Fleet, chiefly from the Cape, would obviously be best utilized for the present at the stud. Mortality among the animals had been very heavy between the Cape and Port Jackson. Surgeon Arthur Bowe of the *Lady Penrhyn* tells us that in the ships the fowls died so consistently of some mysterious disease that the suspicion was mooted that the Dutch vendors had "given them something." The sheep died also in great numbers. By January 6, 1788, all the sheep on the *Lady Penrhyn* had "gone to the seals."

Of the few sheep landed in Sydney Cove at least five were killed by lightning on February 2. They had been put to shelter in a shed at the foot of a tree which was struck during a storm. In the July following Phillip wrote that the greater part of their live stock was dead. Sheep, it was thought, did not do well in the climate.

A loss which was perhaps more serious still, took place in the following May, when a number of their cattle went amissing. Four cows and two bulls went off into the bush and beyond the ken of those in the settlement, to carry out their stud duties after their own fashion. They did it very well, too, for in 1795 they were discovered some thirty miles from Sydney. They had increased to the considerable family of "nearly sixty head of remarkably fine cattle." But at least they had been of no service to the settlement during the first six or seven years of its life and the only cow which was left, not being in calf, seemed to go off her head. So she was shot. After leaving the Cape and reaching Port Jackson not a particle of fresh meat passed the lips of the people of Sydney for the first two and a quarter years of its existence (and probably for long after that) if one may except that of an occasional kangaroo or an emu. Once in a way, indeed, it is probable that a turtle was brought to the settlement. The *Supply* once (in January, 1790) brought three turtles from Lord Howe's Island. But there was no daily call from the butcher, no milk supply and no luxury of any sort, not always even a sufficiency of food either for those who were well or for those who were sick.

There must have been plenty of fish in Sydney Harbour at that time, but for some reason or another the supply did not come up to their needs or even to their expectations. It was very intermittent and unreliable. Soon after landing a convict named William Bryant was put in charge of the harbour fishing. He is said to have been in the habit of selling some of the fish that should have been available for the wants of the sick. But on the integrity of Bryant historians of the time differ. Eventually he absconded with one of the boats, taking his wife, two children and seven other convicts. He sailed his open boat to Timor, but eventually was handed over to Captain Edwards of the *Pandora* by the Dutch authorities and died in Batavia.

Even the gathering of wild spinach and parsley seems to have been an occupation fraught with con-

siderable danger. Those who were sent on this errand sometimes came home with a spear in some portion of their anatomy or with their heads battered by a waddie into an unrecognizable state. Sometimes they came not home any more till they were brought in by some search party, just to be decently buried. A few convicts just disappeared.

Hitherto we have been considering the deficiencies in fresh vegetables and meat. These were not the only things the need of which became urgent. As early as July, 1788, Surgeon White, writing to Lord Sydney, informed him that the prevalence of disease had so increased the consumption of medicines that the supply of drugs which he was then requisitioning, would be "much wanted before any ships (could) possibly arrive . . . from England." He emphasized the distress "amongst the troops, their wives and children, as well as amongst the convicts, for want of necessaries to aid the operation of medicine." He did not say so in so many words, but he sought to indicate that medicines were not much use without a sufficiency of food and food of such a kind as would suit invalid stomachs. He enumerated certain "necessaries" among which were sugar, sago, oatmeal, barley, rice, currants, different spices, vinegar and portable soup. White wrote thus in July, 1788. It was not till June, 1790, nearly two years, that some of these items reached him. In the meantime he tried various locally grown medicines, such as red gum, yellow gum. Note the absence of condensed milk which I suppose was not in existence in those days. I remember how much we in the General Hospital grieved in 1893 on one occasion when floods cut off our milk supply for days and we had to turn to condensed milk. In 1788 Sydney Cove had neither fresh nor condensed milk! More than two years elapsed before the articles requisitioned by White on this occasion reached Sydney.

Ross wrote at this time to the Home Secretary complaining that the men of his troops were not getting their full supplies and whining—as poor Ross always did about this time. He must have been a terrible incubus to Phillip and the settlement generally.

White's letter was in strong contrast. His evident intention was to be entirely helpful to Governor Phillip. Ross's, on the contrary, was the letter of an irreconcilable tell-tale, whose fancied personal grievances were all in all. But, as will be seen, in his private correspondence later on White took a very pessimistic view of the prospects of a successful settlement at Port Jackson.

White desired that medicines should be sent from the Apothecaries' Hall, so that they would be of the best and freshest quality procurable. This last attribute was an important point to a settlement which was so far away from base supplies.

In addition to the want of food and medicines the want of clothing was equally acutely felt. It is difficult work to provide for the sick without having proper supplies of food and clothing for them. Beside these deficiencies the housing accommodation for patients must have been quite primitive. The Permanent Building not being finished, was not in use for many months. Workmen who could build, were few among the convicts and they were weak and ill for the most part.

Phillip was not blind to the needs of the hospital in this respect. It is written in Phillip's "Voyage" (page 124):

> It has been also the object of the Governor's attention to place the public buildings in situations that will be eligible at all times and particularly to give the storehouse and hospital sufficient space for future enlargement, should it be found necessary.

Tents in which patients were treated, eventually gave way to a building. But there was difficulty about building material. Cabbage palm wood was first used. Necessarily it was green and it could not be expected to last long. The convict huts and presumably the hospital also consisted of "upright posts, wattled with slight twigs and plastered with clay." Stone and good stone too for building was to be had in plenty, but there was no means of procuring lime for mortar in sufficient quantity. For the Governor's cottage enough lime was obtained from oyster shells, otherwise where stone was used in public buildings at that time it was plastered with clay, which made it "necessary to give great thickness to the walls." Even then the walls were not so firm as might have been wished.

Good clay for bricks there was, however, and very good bricks were made. At first for roofing thatch was used, but soon they used "shingles made from a tree in appearance like a fir, but producing a wood not unlike the English oak." Perhaps this is the origin of the name "sheoak" for the *Casuarinæ*. Of such shingles a roof more secure than thatch was made, but it was not enough for storehouses.

Phillip had begun to realize from the first how likely the settlement was to be a starved one and that the starvation process was likely to continue for a long time. His dispatches to the old country all the time kept representing to the authorities the seriousness of the situation and while he urged them to send relief ships, he strove hard to avert calamity by every means in his power. He sent the *Sirius* to the Cape of Good Hope, from whence she returned in May, 1789, with some seed wheat and barley, four months' supply of flour for the settlement and a year's provisions for the ship's company.

On March 6, 1790, the settlement was on reduced allowances as usual and things promised to be much more serious. Phillip then sent the *Sirius* and the *Supply* to Norfolk Island with sixty-five officers and men, five women and children (from the civil department) and one hundred and sixteen male and sixty-seven female convicts with twenty-seven of their children—about two hundred and eighty persons. This he did to relieve Port Jackson as far as possible and in the hopes that there would be less stress for want of provisions at the island, where there was at that time plenty of vegetables, fish and birds. The *Sirius*, however, was wrecked on this occasion, fortunately after having discharged

the whole of her living cargo and a portion of her own stores. But the living cargo also represented mouths to feed and Norfolk Island did not relish this unexpected addition to her population! She was soon under martial law and on short allowance.

Soon after the *Supply* returned to Port Jackson, she was dispatched to Batavia whence she arrived back on December 17, 1790, with only eight months' provisions for her own people, none for the settlement.

In Batavia Bail, the Commander of the *Supply*, purchased 20,021 pounds of flour, 200,000 pounds of rice and some salt provisions at exorbitant prices and hired a ship called the *Waaksamheyd* to bring the provisions to Port Jackson. This ship arrived on December 17, 1790. On delivery of her cargo it was found short by forty-two thousand nine hundredweight of rice, for which butter was accepted at the rate of one pound of butter for eighteen pounds of rice.

When in 1791 the *Supply* also was condemned and passed out of commission in England, the anxiety increased. She was replaced by a larger boat of the same name and so by 1796 things in Port Jackson must have been considerably improved, for in that year the new ship was dispatched to Norfolk Island with eight months' supply of salt meat, "slops" and every other kind of stores. In 1797 they were getting live stock from abroad in greater numbers and the private and public herds were increasing.

The *Supply* brought from the Cape in that year among other things twenty-seven cows and thirty-five sheep. She lost eight cows, two bulls and thirteen sheep. William Kent was in command of the *Supply* on that occasion and he literally pulled the rotten ship together to get her back, by passing a cable round her and setting on it with the windlass to bring her timbers together, so that she leaked a little less!

Meanwhile the Admiralty authorities were for various reasons rather slow to act. A ship called the *Guardian* under Lieutenant Riou was dispatched for Port Jackson. She carried twenty-five convicts and a quantity of supplies of many kinds, together with useful plants and trees and a number of men accustomed to farming, who were to act as superintendents of convicts in New South Wales. She arrived at Table Bay in November, 1789.

On Christmas Eve some time after leaving the Cape, the *Guardian* struck an iceberg. Her people for the most part took to boats, of which one only got into harbour at the Cape. Those who with Lieutenant Riou stuck to the ship by dint of jettisoning much cargo, live-stock (picked up at the Cape before leaving) and dead weight, managed to keep her afloat till she was taken in tow by a passing French ship and brought into Table Bay. Ultimately she was beached and abandoned and the useful remains of her cargo were taken aboard other English ships then on their way to New South Wales. Thus the *Lady Juliana* took seventy-five barrels of flour and a pipe of wine, and the three ships of the Second Fleet which took twenty convicts—all that remained of the original twenty-five (they all received pardon in New South Wales)—and five of the superintendents who were saved from the wreck; also four hundred tierces of beef and two hundred of pork.

The loss of the *Guardian* meant much to the Hospital at Port Jackson. She had on board "for the Hospital": sugar, brown and loaf, sago, currants, cinnamon, nutmegs, cloves, pearl barley, tamarinds, rice, medicines amounting to £420 (evidently in response to Surgeon White's requisition). There were further large quantities of clothing materials, oatmeal and so forth, much of which was quite destroyed.

The *Lady Juliana* and the *Justinian* had arrived in Port Jackson on June 3 and 17, 1790, respectively and brought provisions which justified the restoration of a full allowance to the settlers. There was much rejoicing and relief which was to last only a short time. Between June 26 and 29 came the three ships of the Second Fleet. They brought more than a peck of disasters.

When the Second Fleet arrived in Port Jackson in 1790 whatever hospital accommodation they had and of whatever material it was made, the surgeons must have been put to terrific straits to accommodate and feed anything like the number of invalids that were sent ashore from those awful ships. Two hundred came ashore at once; some died as they were being brought ashore. The number in hospital, all told, was four hundred and eighty-eight; thirty tents were in use (Barrington).

The number of sick who were landed for hospital was four hundred and ninety-one. The rest of the figures of the Second Fleet are illuminating. Here they are:

One thousand and seventeen convicts were placed on board, eleven of whom died before sailing, leaving 1,006, of whom 267 died on the voyage. The *Neptune* carried 433 male convicts and 78 female convicts. She lost 162 on the voyage and landed 269 sick. The *Surprise* carried 256 male convicts, lost 42 on the voyage and landed 126 sick. The *Scarborough* carried 256 male convicts, lost 68 on the voyage and landed 96 sick. After landing there were 124 more deaths.

The result of this terrible record was that the care of the health of the convicts in transports was for the future wholly vested in the medical officers. Such a holocaust never occurred again.

And all these sick people added much to the work of the doctors in Port Jackson and to the mortality of the settlement. Things would have been worse, too, if it had not happened that the ships had brought also "a well-contrived and readily-erected temporary hospital," which was put up immediately on their arrival (Southwell Papers).

The map of the settlement, published in Phillip's "Voyage" and the description which accompanies it, shows that the original hospital "was placed on the west side of the Cove, in a very healthy situation, entirely clear of the town." It was "built in such

a manner as to last for some years. On the high ground between the hospital and the town, if water (could) be found by sinking wells, it (was) the Governor's intention to erect the barracks, surrounding them with proper works."

Among all its privations the settlement was fortunate in one respect. There was no epidemic of any of the exanthems among the white people. But it is very interesting to read in all the early historical works about Sydney of the occurrence of an epidemic of smallpox amongst the blacks. It is remarkable that, though scores of natives died of smallpox, there appears to have been only one individual amongst the whites, a seaman belonging to the *Supply*, who got the disease. In his case it was fatal. Captain Tench's book refers to the matter in these words:

An extraordinary calamity was now (April and May, 1789) observed among the natives. Repeated accounts brought by our boats of finding (dead) bodies of Indians in all the coves and inlets of the harbour, caused the gentlemen in our hospital to procure some of them for the purposes of examination and anatomy. On inspection it appeared that all the parties had died a natural death; pustules, similar to those occasioned by the smallpox were thickly spread on the bodies; but how a disease, to which our former observations had led us to suppose them strangers, could at once have introduced itself and have spread so widely, seemed inexplicable.

Captain Tench in a footnote discusses the mystery of the introduction of this disease and puts a number of questions "for the ingenuity of others to exercise itself upon." "Is it . . . indigenous . . . ?" "Did the French ships . . . . under M. de Peyrouse introduce it? Let it be remembered that they had now been departed more than a year and we had never heard of its existence on board of them." "Had it travelled across the continent from its western shore, where Dampier and other European voyagers had formerly landed?" "Was it introduced by Mr. Cook?" "Did we give it birth here? No person among us had been afflicted with the disorder since we quitted the Cape of Good Hope, seventeen months before." "It is true that our surgeons had brought out variolous matter in bottles, but to infer that it was produced from this cause were a supposition so wild as to be unworthy of consideration." The first vaccination in New South Wales for variola was done by John Savage in 1804. Interesting particulars are in "The Historical Records of Australia," Volume 4, Series I., pages 647-648.

Intelligence was brought that an Indian family lay sick in a neighbouring cove: The Governor, attended by Arabanoo[1] and a surgeon went in a boat immediately to the spot. Here they found an old man stretched before a few lighted sticks and a boy of nine or ten years old pouring water upon his head from a shell . . . . Near them a female child lay dead and a little farther off its unfortunate mother and the body of the woman showed that famine superadded to disease had occasioned her death; eruptions covered the poor boy from head to foot and the old man was so reduced that he was with difficulty got into the boat. Their situation rendered them incapable of escape and they quietly submitted to be led away. Arabanoo, contrary to his usual character, seemed at first unwilling to render them any assistance; but his shyness soon wore off and he treated them with the kindest attention. Nor would he leave the place till he had buried the corpse of the child; that of the woman[1] he did not see from its situation and as his countryman did not point it out the Governor ordered that it should not be shown to him. He scooped a grave in the sand with his hands, of no peculiarity of shape, which he completely lined with grass, and put the body into it, covering it also with grass and then he filled up the hole and raised over it a small mound with the earth which had been removed.

They were taken to the settlement and housed in an uninhabited dwelling.

By the encouragement of Arabanoo . . . . and the soothing behaviour of our medical gentlemen they became reconciled to us and looked happy and grateful at the change of their situation.

Sickness and hunger had so exhausted the old man that little hope was entertained of his recovery. He pointed frequently to his throat and at the instance of Arabanoo he tried to gargle it—with painful result. "*Bado, bado*" (water), was his cry . . . . (and) he drank largely of it. He was equally importunate for fire, being seized with shivering fits and one was kindled. At the sight of fish he turned away his head with . . . . loathing. Nanbaree (the boy) on the contrary, no sooner saw them than he leaped from his cradle and eagerly seizing the fish, began to cook them. A warm bath being prepared, they were immersed in it, and after being thoroughly cleansed they had clean shirts put on them and were again laid in bed.

The old man lived but a few hours. He bore the pangs of dissolution with patient composure and though he was sensible to the last moment, expired almost without a groan. Nanbaree appeared quite unmoved . . . . and surveyed the corpse of his father without emotion, simply exclaiming "*Bo-ee!*" (dead). This surprised us as the tenderness and anxiety of the old man about the boy had been very moving.

Nanbaree was adopted by Mr. White, Surgeon-General of the Settlement, and became henceforth one of his family. In 1802 Nanbaree sailed with Flinders, but nostalgia led to his being sent back on the *Lady Nelson* from the Cumberland Islands.

Arabanoo, poor fellow, died of smallpox on May 18, 1789. He had caught the disease from Nanbaree's family.

Personally one wonders if an outbreak of smallpox could be handled so casually in these days without spreading. The "contacts" seem to have had a very free hand to do what would be forbidden now. Might this have been varicella? Might that disease not have been very fatal among native races, with no established immunity, though not spreading rapidly among whites? The severity of the one fatal case in a white man is against varicella. The epidemic among the blacks seems to have been "short, sharp and decisive." It did not last as long as one would expect variola to last.

In any case a race dependent on hunting for sustenance would suffer the added disability of scarcity of food when their adults were incapacitated by an epidemic. The medical gentlemen were satisfied that the deaths among the blacks were partly due to starvation. In a European community adults would for the most part be immune to varicella.

[1] A native who had been captured and brought into the settlement and kindly treated in the hopes of establishing friendly relations with his brethren at a later date.

[1] Captain Tench and Mr. Bull subsequently went across and burned this woman's corpse.

Under the circumstances prevalent in these early years of the medical life of the Australian community even Mr. White, Surgeon-General, became hopeless as to the future of this country. His official correspondence does not reveal this, but the extent to which during the first two and a half years the iron had entered into his soul, is revealed by a private letter written by him to Mr. Skill, a ham dealer in England, under date of April 17, 1790. The settlement had been on half rations of flour and pork. The Governor and his officers had "determined on the necessity of reducing (the) half allowance of those two articles to such a proportion as (would) enable them to drag out a miserable existence for seven months." The *Sirius* had just been wrecked. It had been intended that she should have gone to China for relief "and on her dispatch all (had) depended." If there were no arrivals in the next seven months, "the game," wrote Mr. White, "will be up with us."

They had not raised enough grain in two and a quarter years to keep them for three weeks and Mr. White writes of "the ingratitude and extreme poverty of the soil and country at large," and of "a country and place so forbidding and so hateful as only to merit execration and curses" *et cetera, et cetera.*

Doubtless such opinions were the reflex of the general conversation among the people of Sydney at the time. Empty stomachs or a monotony of poor food produces that kind of talk. There are lots of men who had opportunity of learning that during the war. In Mr. White's case, as in the case of many others, there was added to scanty food supplies for himself and patients a scanty supply of clothing, drugs and equipment of all kinds. What wonder if he expressed such opinions in private! Officially he pulled through, apparently doing his duty and throwing no difficulties which could be avoided in the Governor's way.

At the end of the following year (December, 1792) he applied through the Governor to Sir A. S. Hamond, one of the Commissioners of the Navy, for leave of absence or in the alternative, permission to return to England on half pay "to adjust the deranged state of his affairs." He could with propriety claim the indulgence on account of bad health.

Phillip himself returned to Europe for the recovery of his health by the ship which carried White's application.

For one reason or another White's chance to take leave of absence did not come till December 16, 1794 (two years further service), when he left Sydney in the *Dædalus*. He reached England in July, 1795, and did not return to Australia.

In August, 1796, Mr. William Balmain was appointed to succeed him. White retired from the service on an allowance of five shillings a day and was appointed Surgeon to one of His Majesty's dockyards.

The records of New South Wales and of Australia contain quantities of interesting information to the credit of White, of Balmain and of Thomas Jamieson—the three first Principal Medical Officers of Australia. Is there any memorial to them, for instance in the Library of the B.M.A. Building in Sydney?

ACUTE NEPHRITIS IN CHILDREN, WITH SPECIAL REFERENCE TO RENAL EFFICIECY TESTS.

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Ætiology.

IN examining the clinical histories of a number of children suffering from acute nephritis with a view to ascertaining a definite causative factor for this disease, it soon becomes obvious that the patients may be divided into two main groups.

The first group includes those children in whom despite the most careful inquiry and thorough clinical examination, there is no ascertainable cause. These cases are probably bacterial in origin, although it is impossible to determine the mode of ingress of the infecting organism. They constitute the so-called primary or idiopathic acute nephritis of children. With this group cold and general debility associated with lack of resistance due to insufficient feeding appear to be important factors in precipitating the illness.

In the second group are those children in whom the nephritis supervenes on or appears concurrently with an acute infection. These are spoken of as secondary acute nephritis. In this class are included: (i.) Those cases of acute nephritis which occur as a complication of scarlatina and which rarely come under observation in general hospitals as they usually run their complete course in the infectious diseases hospitals. (ii.) Those cases of acute nephritis associated with some other acute infection such as tonsillitis, impetigo, pneumonia and empyema, measles, pertussis, varicella, diphtheria, congenital syphilis and less commonly influenza, mumps and scabies, meningitis, rubella, acute rheumatism, typhoid, rarely with glandular fever, Henoch's purpura or in association with acute diarrhœa and occasionally in the tropics with malaria.

Of the patients under consideration numbering one hundred and three all of whom were treated in the wards of the Children's Hospital, Melbourne, inquiry into the ætiology has elicited the following information:

Tonsillitis.

Twenty-nine children gave a history of having had a sore throat at periods varying from a few days to six weeks before the onset of symptoms. In three instances this was accompanied by suppuration in the cervical lymphatic glands and one was complicated by a peritonsillar abscess.

CASE No. 20.—A female, aged six years, had suffered from acute tonsillitis two weeks before admission. Ten days later she vomited, her face became puffy and the urine was diminished in quantity and smoky in colour.

Impetigo.

Seventeen children had impetigo during the previous two to six weeks before admission and all of these presented either active impetiginous lesions on the limbs and face or recently healed sores.

CASE No 9.—A male, aged nine years, had severe impetigo for two weeks and for seven days before admission had complained of headaches and been delirious at night. The urine was diminished and there was generalized œdema and pain in the loins.

Pneumonia.

Eleven of these patients had had pneumonia, seven within a fortnight of the onset of nephritis and four concurrently with it. In one the kidney condition became evident simultaneously with the development of empyema.

CASE No. 34.—A male, aged three and a half years, had a right basal lobar pneumonia two weeks previously. Three days after the temperature fell by crisis he complained of abdominal pain and was noticed to be œdematous and passing less than the normal quantity of urine.

Measles.

Fifteen of the children had suffered from measles at periods of two to five weeks previously. This was during the course of a particularly severe epidemic.

CASE No. 43.—A female, aged twelve years, had measles three weeks ago and eight days after the rash faded it was noticed that her face was puffy and her urine dark in colour.

Other Causes.

In twenty-seven no ætiological factor was ascertainable. Of the remaining patients two had influenza a fortnight before the onset of nephritis, one had a profuse purulent nasal discharge and the last was suffering from scabies with severe secondary infection of the skin at the time of admission. The last mentioned child was of interest in view of the fact that she came from a charitable institution in which all of the children were badly infected with scabies and three of the inmates developed acute nephritis as a complication.

Symptoms and Diagnosis.

The onset may be sudden or gradual and is usually accompanied by general symptoms such as headache, drowsiness, anorexia and perhaps vomiting or diarrhœa. In the majority of cases these symptoms are accompanied by œdema and diminution of the secretion of urine with change in colour of the latter. With this type of history there is little doubt as to the diagnosis and in the present group of cases no less than eighty-nine presented such typical symptoms.

It is in the small proportion of patients who exhibit none of these usual features, however, that there may at first be a little uncertainty as to the diagnosis. For example, pain was the predominating symptom with nine of these children, in three the pain was in the lower part of the abdomen and referred to the testes, five others complained of severe pain in the lumbar region and legs, while the ninth had acute pain in the chest and one shoulder and became affected by pleurisy concurrently with the nephritis.

Convulsions occurred at the commencement of the illness with eleven of these patients and severe headache was complained of by five shortly before the convulsion.

Giddiness was a prominent symptom in three instances and failing eyesight first attracted attention in one patient.

In every case examination of the urine by the ordinary ward tests revealed the presence of albumin in varying quantities and the great majority of specimens also contained blood.

Microscopical examination revealed with unfailing regularity numerous epithelial cells and polymorphonuclear cells in all stages of degeneration, also cellular, granular and blood casts in various proportions and numerous red blood cells.

Many of the specimens contained numerous red blood cells in the very early stages before the cellular and blood casts appeared and again in the patients who passed through a more protracted convalescence, it was found on many occasions that there were large numbers of red blood cells persisting in the urine after the casts had disappeared and the patient was clinically improved.

This continued presence of a few red blood cells in the urine was frequently encountered over a period of many weeks or even months after the urine was free from albumin and the patient apparently cured.

In all the children suffering from nephritis concurrently with lobar pneumonia catheter specimens of the urine were obtained and smears made from the centrifuged deposit were stained and examined microscopically. Every one of these showed the presence of numerous diplococci which retained the stain in the Gram method, were often capsulated and could be regarded from their morphological characters as pneumococci.

Ophthalmoscopic examination rarely revealed any abnormal appearance of the retina during the acute stages of the nephritis.

Prognosis.

It has always been a difficult matter to foretell what might be the ultimate result of an attack of acute nephritis in a young child and it is generally the first point about which the parents seek information, when they know that the child is suffering from acute Bright's disease.

Generally speaking the outlook seems to be very much better in children than in adults and in the majority complete resolution of the inflammatory process is unattended by any serious after results. The reason for this according to Hutchison[1] "is no doubt due to the fact that in children there is rarely if ever a chronic nephritis at the back of the condition on which the acute inflammation has supervened—a state which is not uncommon in adults." Uræmic manifestations culminating in

convulsions are not necessarily of bad prognostic omen.

Our observations throughout this series show that as a rule those cases with a sudden onset and particularly if accompanied by an obvious source of infection, usually run a short, sharp course and are followed by complete recovery without any serious late results, while those with a more insidious onset and no ascertainable cause more often run a protracted course and in many instances leave the child a chronic invalid of the "pale puffy" type. Ultimately the condition of this type of patient drifts into the subacute or chronic nephritis of young adults.

It was mainly with the idea of advancing our knowledge as to prognosis that renal efficiency tests were carried out on this group of patients suffering from acute nephritis. We have aimed especially at following these patients up for some time after their discharge from hospital and comparing their condition then with the findings of the renal efficiency tests during the acute stage in the hope of eliciting some information that would be of definite value in prognosis in future cases.

Renal Efficiency Tests.

The tests used were: (i.) the urea concentration test, (ii.) the estimation of the blood urea, (iii.) the estimation of the urinary diastase. The technique was carried out as described by Maclean[2] with slight modifications.

Urea Concentration Test.

In carrying out the urea concentration tests the children were given twelve to fifteen grammes of urea dissolved in one hundred cubic centimetres of water flavoured with syrup of orange or a syrup and liquorice as follows:

℞—

Ureæ (pure), 15 grammes.
Extracti glycyrrhizæ liquidi, 2 mils.
Syrupi simplicis, 10 mils.
Aquam ad, 100 cubic centimetres.

Occasionally they vomited soon after taking the urea, but with the great majority there was no trouble in this respect.

For this test the specimen of urine is collected in the early morning when the nitrogen metabolism is at its minimum, the requisite dose of urea is then administered and samples of urine collected at hourly intervals for three hours, the quantity and specific gravity being recorded on each occasion in order that any diuresis might be considered in the interpretation of the results of the test.

In this estimation it is advisable to wait a few minutes after obvious chemical reaction between the urine and the alkaline hypobromite has subsided before reading the volume of nitrogen liberated. This allows the volume to become stabilized, the reasons for the initial variation being: (i.) The heating of the gases evolved as a result of the rapid chemical action and their subsequent cooling. This can be obviated and a little time saved by standing the bottle in which the urine and the hypobromite solution are mixed, in a cold water bath. (ii.) An equal volume of carbon dioxide is liberated with the nitrogen and some escapes fixation by the soda but is reabsorbed later.

A brief consideration of the chemical reactions will illustrate this.

The hypobromite is prepared by adding bromine to a great excess of sodium hydroxide solution.

$$2NaOH + Br_2 \rightarrow NaBr + NaBrO + H_2O.$$

This is a very active agent in making oxygen available to convert the urea to carbon dioxide, water and nitrogen.

$$3NaBrO \rightarrow 3NaBr + 3(O).$$
$$CO(NH_2)_2 + 3(O) \rightarrow CO_2 + 2H_2O + N_2.$$

The carbon dioxide fixed by the excess alkali is converted to the carbonate.

$$2NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O.$$

The nitrogen is collected and its volume is directly proportional to the quantity of urea present in the sample of urine.

Blood Urea Estimation.

In carrying out the estimation of blood urea the blood, withdrawn from a vein and immediately oxalated, is digested with the specified quantity of freshly prepared soya bean meal in a dilute solution of acid sodium phosphate.

The urease of the bean hydrolyses the urea quantitatively to ammonium carbonate.

$$CO(NH_2)_2 + 2H_2O \rightarrow (NH_4)_2CO_3.$$

The acid sodium phosphate prevents any loss of ammonia during the digestion process by fixing it as sodium ammonium phosphate.

This is then treated with an excess of alkali and the liberated ammonia is aspirated with a current of ammonia-freed air into a known excess of a standardized solution of sulphuric acid.

$$(NH_4)_2CO_3 + 2KOH \rightarrow 2NH_3 + K_2CO_3 + 2H_2O.$$

The quantity of ammonia liberated which is in direct proportion to the quantity of urea present, is estimated by back titration of the acid.

During the estimation there is a great tendency for the alkaline blood mixture to froth and to be carried over into the acid. To prevent this Maclean recommends that caprylic alcohol be added in the first instance.

We feel a little diffidence in adding such a substance to the soya bean before the action of its ferment is effected and have obtained very satisfactory results by adding pure kerosene to the mixture with the alkali and agitating gently before aspiration is commenced.

With the smaller children considerable difficulty was often experienced in obtaining sufficient blood for the blood urea estimation and in many of these we had to be satisfied with the urea concentration test and the urinary diastase only.

In a few instances it was noticed that in spite of all precautions the frothing still occurred most persistently and with these few patients it was observed in each case that when the oxalated blood was allowed to stand in a test tube the corpuscles did not settle down as a well defined layer with the

clear serum supernatant, but instead remained in a more diffuse flocculent sediment in the tube.

Whether this was directly associated with the persistent frothing or was merely a coincidence is a matter for conjecture.

A number of samples of the oxalated blood were also used for the estimation at intervals of twenty-four and forty-eight hours after the original estimation had been carried out and in almost every case the figure was found to be for all practical purposes identical with the fresh blood. It thus appears that the blood is still quite reliable for this test at least two days after it is taken from the patient, provided it is oxalated in a sterile test tube. This point we considered worthy of mention in view of the fact that specimens often have to be sent some considerable distance by the practitioner to the nearest laboratory and in this case such delay would not alter the figure for the urea content of the blood to any appreciable extent.

Urea Concentration Factor.

The urea concentration factor is a figure representing the number of times the urea of the blood is concentrated during its passage to the urine. In general this factor was found to be considerably higher in children than in adults, giving in our series of cases a maximum of 175.

Urinary Diastase.

The urinary diastase is estimated by digesting a definite quantity of a standard solution of starch for a stated time with varying dilutions of the same urine which must be a twenty-four hours specimen.

The conversion of the starch to dextrins is shown by its failure after digestion to give the blue colour with the iodine solution.

The arbitrary figure representing the number of units of diastase was found to be usually more or less in agreement with the urea concentration tests, but in a number of cases these two tests were by no means in parallel.

On the whole we do not regard the urinary diastase estimation as very reliable nor of very much assistance in judging renal efficiency.

Treatment.

The chief features in connexion with the treatment of these patients were as follows:

Medicinal.

The œdema responded fairly rapidly as a rule to *pulvis jalapæ compositæ* which was administered to all patients as a routine on admission. This was generally supplemented by magnesium sulphate or other saline purgative.

In some of the more obstinate cases and especially those which drifted into a subacute stage it was found that the œdema was much more resistant to treatment, but would often respond to potassium citrate, theocin sodium acetate or Guy's pill while in others again it would improve spontaneously without any specific medical treatment.

Dietetic.

Various forms of diet were tried. For example, some patients were allowed only a very restricted dietary consisting at first of water cereals alone and in limited amount in order to avoid an excess of fluid in the already œdematous tissues. Others were allowed abundant fluids and a somewhat more liberal diet including milk, cereals and bread with butter or jam.

Still another group were treated with a high protein diet and a few others were kept on a salt free diet.

Finally a small number were allowed the full ward diet throughout the course of their illness without any detrimental effect.

In reviewing the case histories it appears that the variations in diet have made very little difference to the duration of the disease as the average stay in hospital has been practically the same for all groups.

General.

Hot packs, electric baths and especially ordinary hot baths were found to be valuable adjuvants in lessening the œdema.

In a few very obstinate cases Southey tubes had to be resorted to in order to relieve the tense œdema of the extremities, while in one patient with extreme ascites a small trocar and cannula were inserted through the abdominal wall and the latter connected with a fine rubber tubing and strapped in position, thus allowing a gradual drainage for twenty-four hours or longer. This was considered to be less liable to cause shock than when the fluid is removed more rapidly.

Uræmia associated with convulsions occurring at the onset or during the course of the acute stage generally responded almost dramatically to venesection or lumbar puncture or both.

In those children in whom a definite ætiological factor is evident such as impetigo or tonsillitis, removal of the source of infection in the majority of cases helps considerably in curing the nephritis. This was observed especially after tonsillectomy for throat infections.

With reference to those children who do not quickly improve from the acute stage, but pass on to a condition of subacute or even subchronic nephritis, we have seen five who have been subjected to Edebohl's operation of decapsulation of the kidneys and must confess that we have not been at all impressed with the results of this drastic measure.

Four of these five children have died within four months of the time of operation without showing anything more than a very transitory improvement.

When these kidneys are seen *post mortem* it is usually a most difficult matter to remove them from the mass of fibrous tissue in which they have become imbedded in consequence of the scarring which occurs as a result of the operation of decapsulation.

It always seems that this operation defeats its own object by surrounding the kidneys with a firm layer of cicatricial tissue which is devoid of blood

vessels rather than improving the vascular supply of the organs.

The one patient who has survived, is an older boy. He is still attending the out-patient department and although the operation may have prolonged his life, it has done little else as he is still anything but a healthy child.

As a result of these experiences we feel that one is rarely if ever justified in subjecting a child to a double Edebohl's decapsulation as a means of treatment for nephritis.

In short, from our observations on these children it appears to make little difference what specific line of treatment is followed out provided that they are kept at rest in bed and any urgent symptoms dealt with as they arise. Complete rest is in our opinion one of the outstanding principles in the treatment of this condition.

Correlation of Renal Efficiency Tests with Clinical Condition at a Later Date.

The series comprises a total of one hundred and three patients whose ages ranged from two years to thirteen years. Of these sixty-five were males and thirty-eight females.

The total number of investigations included one hundred and eighty-seven urea concentration tests, ninety-two blood urea estimations and one hundred and thirty-two urinary diastase tests.

In perusing the records of these patients we have been particularly interested to compare the results of the renal efficiency tests at the time of the acute illness with the clinical condition of the patient when seen at a much later period after the acute condition had apparently subsided.

Of the total of one hundred and three cases seven ended fatally; none of the patients died during the acute stage of the illness but all had lapsed into the more chronic condition extending over a period varying from nine to eighteen months. Three of these patients contracted measles and succumbed to the bronchopneumonia which occurred as a complication, thus bearing out the generally accepted opinion that these children are particularly susceptible to intercurrent infections. One became purpuric and developed several large extravasations of blood into the subcutaneous tissues shortly before death while the remaining three gradually became worse and then suddenly developed uræmic manifestations shortly before death.

Of the seven children who died, all with one exception showed very poor power of concentrating urea and judged by this would be classed as having very poor renal efficiency.

The one child who was able to concentrate the urea, maintained this power up to the time of his death.

The complete figures of these seven fatal cases are as set out in Table I.

These patients were all obviously in an advanced state of renal inefficiency for they were very œdematous and passing only small quantities of urine. With all of them one would have anticipated that the urea concentration figures would have been low, so that in all but the one exceptional case the results were a true indication of the clinical condition of the patient.

Of the remaining patients thirteen could not be traced after their discharge from hospital as they had not attended the out-patient department subsequently. This leaves a total of eighty-three who have been seen at various times since the attack of acute nephritis over periods extending from a few months up to two years.

It was from this group that we had hoped to obtain some information as to the value of renal efficiency tests in prognosing the ultimate result of acute nephritis in children.

After carefully examining these records and seeing the children we have gained the following impressions as to the efficacy of the tests.

The blood urea estimations do not help in the slightest degree in giving a prognosis in these children with acute nephritis.

Many who had an extremely high blood urea content, rapidly improved and when seen at a later date had quite a normal figure. Others again whose clinical condition did not improve satisfactorily, were found to have a normal blood urea figure even when they were seen some time later and were still far from well clinically.

TABLE I.

Patient.	Age in Years	Sex.	Ætiology.	Duration of Illness in Months.	Urea Concentration Test.			Cause of Death.
					Before Urea Meal.	First Hour Afterwards.	Second Hour Afterwards.	
No. 1, W.S.	3	M	Idiopathic	10	(*a*) 0.50% [1](*b*) 1.75%	1.00% 2.75%	3.00% 3.45%	Purpura, uræmia.
No. 3, W.F.	7	M	Idiopathic	14	0.50%	0.55%	0.60%	Measles, broncho-pneumonia, uræmia.
No. 13, V.M.	5	M	Scarlatina	11	1.50%	1.50%	1.63%	Uræmia.
No. 14, R.B.	5	M	Idiopathic	10	1.60%	1.70%	1.95%	Measles, broncho-pneumonia, uræmia.
No. 23, H.M.	8	M	Pneumonia	9	1.00%	1.30%	1.75%	Uræmia.
No. 91, L.T.	9	F	Idiopathic	11	1.05%	1.32%	1.42%	Uræmia.
No. 94, D.H.	6	M	Idiopathic	9	1.06%	1.50%	1.80%	Measles, broncho-pneumonia, uræmia.

[1] The second estimations marked (*b*) were made two months later and shortly before death.

TABLE II.

Patient.	Age in Years.	Sex.	Ætiology.	Duration of Illness in Months.	Urea Concentration Test.			Blood Urea in Milligrammes Per One Hundred Cubic Centimetres.	Urea Concentration Factor.	Remarks.
					Before Urea Meal.	First Hour Afterwards.	Second Hour Afterwards.			
No. 4, W.B.	7	M	Tonsillitis	7	1.50%	2.00%	2.25%	22	68	Quite well twenty-four months later.
No. 16, C.A.	12	M	Influenza	4	2.05%	1.75%	2.35%	17	120	Quite well sixteen months later.
No. 31, C.B.	11	M	Tonsillitis	6	1.40%	2.40%	3.15%	14	100	Quite well twenty-two months later.

The urea concentration figures in the great majority of cases indicated that the renal efficiency was unimpaired and practically every one of these patients when seen later was found to be clinically well and the urine free from albumin, casts and red blood cells. These were the findings with sixty-nine of the eighty-three patients.

The results of urinary diastase estimations ran almost in parallel with those of the urea concentration tests, but are not considered to be of any great value as from time to time they give results which are altogether inconsistent with the clinical condition of the patient.

Two small groups of patients were however of rather more interest. For example, several children, although very ill when in hospital, gave good results in their tests and yet did not appear quite well clinically and the urine persistently was found to contain a small quantity of albumin and also a few red blood cells on microscopical examination, even at the time of their discharge from the ward. These patients when seen later for observation were all found to be quite well and remained so.

The figures for three typical cases of this group are shown in Table II.

These results show that the favourable outlook indicated by the tests when the patients did not appear well clinically, was fully justified by the results of the examination of the children at a later date.

On the other hand, several more children were encountered who gave poor results in their tests, although they had apparently recovered completely while in the ward and were seemingly quite well when discharged from the hospital.

All of these children when seen at a later date were found to be in ill health as indicated by pallor, anorexia and lassitude, while in addition the urine contained a trace of albumin and a few red blood cells and occasional hyaline or granular casts.

Table III. shows the figures for three typical cases of this group.

With these children also it appears that the urea concentration test again gave a fairly definite indication of the true state of efficiency of the kidneys and this was confirmed by the fact that the children were certainly not completely cured as shown by the subsequent clinical examinations.

It is in the type of case represented by the examples quoted in the two preceding tables that the urea concentration test is of considerable assistance in giving a prognosis as to the ultimate result.

Conclusions.

The chief points which have become evident during the course of these investigations are as follows.

1. The majority of children suffering from acute nephritis recover completely.

2. The prognosis is better in those patients with a definite primary focus of infection.

3. The urea concentration test is of considerable value as an aid to prognosis.

TABLE III.

Patient.	Age in Years.	Sex.	Ætiology.	Duration of Illness in Months.	Urea Concentration Test.			Blood Urea in Milligrammes Per One Hundred Cubic Centimetres.	Urea Concentration Factor.	Remarks.
					Before Urea Meal.	First Hour Afterwards.	Second Hour Afterwards.			
No. 41, A.A.	10	F	Tonsillitis	4	1.45%	1.50%	1.50%	18	80	Albumin and casts present six months later.
No. 49, P.W.	6	M	Measles	3	1.50%	1.20%	1.40%	116	13	Trace of albumin, few casts and red blood cells present seven months later.
No. 89, J.B.	12	M	Impetigo	5	0.90%	1.25%	1.25%	23	39	Trace of albumin and occasional red blood cells twelve months later.

4. The blood urea and urinary diastase estimations are of no assistance.

5. The operation of decapsulation of the kidneys offers little, if any, chance of improvement.

6. Red blood cells are often found alone in the urine in the very early stages and also when the acute inflammation is subsiding and casts and other cellular material have disappeared.

7. Diet is unimportant in influencing the total duration of the illness.

8. Complete rest is important in the treatment of the condition.

Acknowledgements.

In conclusion we wish to thank sincerely all the members of the honorary medical staff of the Children's Hospital who have so kindly allowed us to carry out these investigations on the patients under their care, to use the clinical histories and to see the patients when they reported subsequently for observation.

We have also to thank Professor A. C. D. Rivett, of the Melbourne University, who kindly standardized the solutions for the blood urea estimations, Dr. Reginald Webster, Pathologist to the Children's Hospital and Dr. H. Boyd Graham, for their willing assistance and helpful suggestions on all occasions and also Sister Bristow and Sister Butler of the nursing staff for their invaluable assistance in connexion with the tedious work of collecting the numerous specimens required for the performance of these tests.

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(1) R. Hutchison: "Lectures on Diseases of Children." 3rd Edition, 3rd Impression, 1918.

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Reports of Cases.

COMPLETE TRANSPOSITION OF VISCERA.

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THE following case merits report on account of the rarity of the condition, especially when revealed *post mortem*.

The patient was admitted on December 10, 1924, at the age of seventy years and during the routine examination the cardiac dulness was found to extend 11·25 centimetres (four and a half inches) outwards in the fifth right intercosal space and the liver dulness was detected on the left side, although these signs were somewhat masked by deformity of the thorax following Pott's disease. He was healthy but for the cardiac dilatation and accompanying cardiac insufficiency.

His mental condition was one of senile dementia. Death occurred two months later on February 10, 1925, from acute bronchitis. At the *post mortem* examination complete transposition of all viscera was found. The apex of the heart was directed downwards and to the right, whilst the aorta arched over to the right, the descending aorta lying to the right of the vertebral column. The left lung was trilobate, the right lung bilobed and deeply congested. The pulmonary artery arose from the left ventricle, the aorta from the right. The liver lay in the left hypochondrium and the spleen on the right side of the abdomen. The cardiac orifice of the stomach was to the right, the pyloric orifice was directed towards the left and in the concavity of the duodenum, open towards the right, lay the head of the pancreas. The caecum and appendix were in the left iliac fossa (a source of possible diagnostic error *in vita*) and the sigmoid colon in the right iliac fossa.

The body presented a true mirror image of the normal anatomical distribution of the viscera.

Reviews.

OPERATIVE SURGERY.

VOLUMES I., II. and III. of Bickham's operative surgery have been reviewed in a previous issue. The remaining three volumes IV., V. and VI. together with the index of the whole work as a separate volume are now to hand.[1] The high standard of the earlier volumes has been maintained. The completed work can claim to be the most comprehensive operative surgery treatise extant and the author is to be congratulated on his monumental achievement, carried out singlehanded. It may be said, however, that for the practitioner doing general surgery the author has not sufficiently indicated in clear and definite terms a definite course of action to be followed in dealing with a particular disease. The reader is left to select for himself one of the numerous alternative methods described and is rarely given the benefit of the author's personal experience and preference. For the specialist surgeon the work will be more useful as a general work of reference than for detailed information. For the latter recourse will still be necessary to monographs in which separate sections of surgery are dealt with by surgeons of special experience in that particular branch.

Volume IV. deals with thoracic and abdominal surgery. Operations on the heart and pericardium are well described and illustrated. In describing the surgery of the intrathoracic portion of the œsophagus the transpleural method as used by Torek and since then in at least one other successful resection of a carcinoma is not mentioned. Only the more difficult extrapleural approach through the posterior mediastinum is described. The operations on the various abdominal viscera and the surgical anatomy of the abdomen are fully described. The use of Reverdin's needles is strongly recommended for rapid closing of wounds, the services of a trained assistant being necessary. Many surgeons will not agree that the integrity and strength of the *fascia transversalis* is of great importance in the prevention of herniæ in general or that its accurate closure is the most important factor in ensuring a soundly healed abdominal scar.

In the discussion of inguinal and femoral herniæ the paramount importance of thorough removal of the sac is not recognized and a notable omission in the section on femoral hernia is that of a description of any method of approach through the inguinal canal above Poupart's ligament.

The various operations on the stomach and duodenum are fully considered with sound reasons on accepted lines for adopting particular methods in the various types. Thorough clearing out of the alimentary tract by appropriate purgation several days before the operation will not be endorsed by all. It is stated that to avoid regurgitation into the stomach of intestinal contents after gastroenterostomy most surgeons perform a jejunostomy three inches below the anastomosis. The author prefers silk or Pagenstecher thread for his anastomoses.

The treatment advised for gastric and duodenal hæmorrhage is disappointing. Mayo-Robson's well known indications are set out including his opinion which the author apparently endorses that simple gastroenterostomy is usually effective. Few will support this.

The liver and gall bladder sections are excellent. The surgery of hydatid cysts occupies a few lines only and is

[1] "General Index to Bickham's Operative Surgery": Volumes I. to VI.; 1924. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little. Royal 8vo., pp. 189. Index Volume Free.

not at all helpful. An authoritative account of the surgery of hydatid disease is not yet available in any textbook.

Operations on the intestinal tract are well described. The author prefers the Battle incision for dealing with the appendix, particularly in intermediate and late cases and especially for suppuration and abscess. Many will disagree with this.

Volume V. deals with the surgery of the large bowel and genito-urinary organs. The surgery of the colon is fully described. The chapters on the rectum are not so informative. Lockhart-Mummery's operation for cancer of the rectum might have been expected to find a place and the section on fistula and fissure-in-ano is disappointing. External oblique on page 200, line 9, should read external sphincter. Also the use of the word "pealed" in referring to separating the peritoneum is obviously an error on line 10, page 236 and the same mistake occurs on line 3, page 322. The description of Miles's operation is not as full or as clearly illustrated as in other works.

The surgery of the kidney and ureter is fully described. Cystoscopy is briefly outlined without details. The surgery of the urethra is disappointing. No reference is made to Mr. Hamilton Russell's operation of excision of urethral stricture although other operations long since discarded are fully described.

Volume VI. deals with the surgery of the prostate as well as of the female generative organs, including obstetrical operations. Thomson-Walker's operation of prostatectomy does not find a place. The various gynæcological operations are well described and illustrated. The last chapter deals with deformities and disabilities of an orthopædic nature not included elsewhere in the work. The descriptions are short and the subjects dealt with are merely sketched out without illustrations. We hope that in future editions this chapter will be amplified to bring it up to the standard of the rest of the work or else that it will be omitted altogether.

The index is full and detailed, so that reference can be made to any portion of the whole six volumes with great ease. It is a book in itself, comprising 189 pages.

A TREATISE ON DYSPEPSIA.

AFTER an interval of fourteen years Dr. Soltau Fenwick has revised and partly rewritten his well known work on dyspepsia.[1] The scheme on which the first edition was based is still retained and the opening chapter gives the classification and varieties of dyspepsia, replacing the purely symptomatic nomenclature for one that tries to express the true relationship of gastric inflammation to certain disturbances of digestion. Nevertheless Fenwick states that many empirical modes are still of value in spite of laboratory experiments which have proved them to be doubtful in origin and useless in application. Furthermore he points out that laboratory methods reveal discrepancies between themselves as to what a stomach is expected to do and what it really does. In other words, the stomach of a healthy dog differs from that of an unhealthy man. He quotes the dictum of Abernethy: "The stomach is neither a stewpan, nor a test tube, but a stomach."

He divides his subject into two parts, gastric indigestion and intestinal indigestion. The former is subdivided into the disorders respectively of secretion, motility, the nervous mechanism, inflammation acute and chronic, visceroptosis, dyspepsias due to foreign bodies, dyspepsias of old age and infancy and dyspepsias due to other diseased organs.

This classification is based on records of five hundred hospital cases and an equal number in private practice.

French, German and American authorities find hyperchlorhydria exists more or less in half the patients with functional disorders, while in London Fenwick considers it is less frequent, though it has been on the increase since the war, so that the figures (60%) are in line with those of continental and other clinicians.

All through the book he introduces many clinical observations which ought to be read not only by physicians but by surgeons as well.

Nocturnal vomiting he finds to be extremely common in the hypersecretion that attends gastric and duodenal ulceration and its existence should at once excite a strong suspicion as to the nature of the complaint. Persistent and incurable flatulence in his opinion is the common feature of the chronic, mild, hypersecretion that accompanies an indurated or atrophic appendix. Gallstones are more often accompanied by acid eructations than any other variety of hypersecretion. Chronic hypersecretion is a common sequela of gastric and duodenal ulcers, but the fact that similar ulceration is frequently produced by a continuous hyperacid secretion due to gallstones and appendicular disease is often overlooked. After severe and repeated hæmorrhage where an ulcer of the stomach or duodenum has been missed by the operator the removal of unsuspected gall stones or a diseased appendix has resulted in the cure of the hæmorrhage and its accompanying hypersecretion. The cases in which Fenwick advises immediate operation are those characterized by severe pain, vomiting and food retention when these have not yielded to medical treatment or recur in spite of it. In all operations on the stomach or intestines careful examination of the gall bladder and appendix should be made and when stones or even a possibly affected appendix are found, both should be removed concurrently.

While strongly advocating surgical treatment in suitable cases he deprecates the increasing tendency to regard all abdominal complaints as amenable to surgery.

Fenwick would greatly enhance the value of his book by giving a review of the after history and remote results of the surgery of the alimentary canal.

One of the best chapters in the book is on chronic gastro-enteritis of infancy. He considers this complaint exerts an important influence on the digestive functions of adult life.

The chapter on dyspepsia due to diseases of other organs is worth reading. Here he revives the views of Stokes and Pollock that the gastro-enteritis which precedes tuberculosis ulceration is due to septic absorption. This he has confirmed by laboratory experiment.

The medical treatment throughout the book is sound and up-to-date. He has a *flair* for stomach lavage.

Taken as a whole the book is well worth careful study. Unfortunately the views of Troussau, Graves, Hurst and Wylie on flatulence and aerophagy are not discussed.

It is refreshing to find that American publishers at last are adopting unglazed paper which is so soothing to the eyes of English readers.

[1] "Dyspepsia, its Varieties and Treatment," by W. Soltau Fenwick, M.D., B.S. (London); Second Edition, Revised. 1925. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little. Royal 8vo., pp. 515, with illustrations. Price: 30s. net.

A HANDBOOK FOR NURSES.

THE majority of nurses in general hospitals complete their training without having had experience of the care of patients in the special departments. This fact makes Dr. Roy H. Parkinson's "Eye, Ear, Nose and Throat Manual for Nurses" a welcome addition to the literature of these specialties.[1]

The general anatomy and physiology of the organs and the symptoms and treatment of the common diseases encountered in each are clearly summarized. Several of the pharmaceutical preparations mentioned, however, are evidently American proprietary drugs, being unknown in Australia.

Theatre and ward technique for examination, operation, and dressing are plainly dealt with and the armamentarium required for each is fully stated.

Emergency measures in postoperative treatment are clearly described and with one or two exceptions constitute the routine procedure in Australia.

The illustrations throughout are excellent. A final chapter of public health should be of value to the Health Department and district nurses.

[1] "Eye, Ear, Nose and Throat Manual for Nurses," by Roy H. Parkinson, M.D.; 1925. St. Louis: The C. V. Mosby Company. Crown 8vo., pp. 207. Price: $2·25.

The Medical Journal of Australia

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A Retrospect.

Bacteriology and Immunology.

The most important publication during the year in bacteriology, protozoology and immunology is that of Gye and Barnard on the discovery of a filter-passing microorganism in cancerous growths. This research has reawakened the interest in the filter-passing viruses. Gye prepared a sand filtrate of the so-called Rous chicken sarcoma No. 1. The filtrate after having been passed through a close pored filter, gave rise to the characteristic tumour when inoculated into chickens. The infective agent was recovered after incubation in a special bouillon medium containing fragments of Rous sarcoma. Treatment of the medium with chloroform robbed it of its infecting power. Gye has concluded that for the successful transmission of tumours two agents are needed, a living virus and a specific substance derived from tumour tissue. He regards the virus as non-specific in so far as the type of tumour is determined not by it, but by the specific chemical factor. More will be heard of this work in the near future.

Gordon has conducted extensive investigations into the characters of the viruses of vaccinia and of variola.

G. F. and Gladys Dick have continued their researches concerning the hæmolytic streptococcus regarded by them as the causal organism of scarlatina. They have published a detailed account of the preparation and standardization of the toxin used in the skin tests and in preventive immunization. They have carried out experiments with the object of producing active immunization with the toxin. They claim that given properly graduated doses at intervals of from five to seven days, all susceptible persons can be immunized. The immunity is stated to last for at least eighteen months.

Denton has recovered a small Gram-negative bacillus from the trachea, bronchi and peribronchial lung tissue of persons who have died of measles. He sugggests that this organism should be further investigation as the possible causal agent of morbilli.

Cameron claims to have isolated a streptococccus from the blood of persons suffering from acute rheumatic fever, rheumatic endocarditis and chorea.

Simon Flexner and Amos have been led by experimental evidence to the conclusion that there is no actual distinction between the virus of encephalitis and that of febrile herpes. They find that it is possible to distinguish the more virulent strains which are associated with encephalitis, from the less virulent which seem to be capable of producing only herpetic lesions.

Southby has found that vaccine treatment of pertussis improves the condition of the patient and lessens the paroxysms, but has little effect on the duration of the disease, save in young babies. He advocates the use of large doses as early as possible in the attack.

Arnold and Weiss have conducted some interesting work in connexion with d'Herelle's bacteriophage. They have come to the conclusion that antilysins belong to the same group of antibodies as antitoxins.

Hirszfeld and Brokman have studied the Schick test for susceptibility to diphtheria in regard to the coincidence of the reaction with serological groups. They found that immunity and susceptibility are inherited in correlation with the dominant properties as well as in relation with the recessive properties.

Rosenow has described a specific precipitin reaction in epidemic poliomyelitis. He has obtained it by pouring a clarified extract of naso-pharyngeal mucus in sodium chloride solution on the surface of antistreptococcal serum used in the treatment of the disease. This test is said to be more useful at the onset of the disease before paralysis has become established.

Reginald Webster and Miss Williams have classified the strains of dysentery bacilli encountered in Victoria into serological groups. The

strains were isolated from the stools of infants and young children. The *W* and the *V* races were found to represent 70% of the strains, while the *W* race alone accounted for 46·2%. In regard to the serum therapy of bacillary dysentery in infants Webster maintains that if the serum be administered within forty-eight hours of the onset of illness, good results may be anticipated. He has adopted a routine method of working which enables him to furnish a bacteriological report within twenty-four hours of the receipt of a specimen of fæces. He advocates the preparation of monovalent therapeutic serum active for the *V* and the *W* races.

Dew has continued his investigations on hydatid disease and has contributed two valuable articles, one on the histogenesis of the hydatid parasite in the pig and the other on daughter cyst formation. He found that the hydatid hexacanth embryo finds its way to the liver by the portal vein; it may reach the liver within twelve hours. A hydatid follicle is produced by the local reaction of the liver tissue and the vesiculation takes place in the second week. At the end of five months the cyst may reach a diameter of one hundred millimetres, but there is no trace of the formation of brood capsules at this stage. In the second article he has come to the conclusion that daughter cyst formation is due to some interference with the normal development of the parasite. Clunies Ross has carried out a survey of hydatid infestation in New South Wales. He has given some indication of the frequency and distribution of hydatid infestation in cattle, sheep and dogs.

Morbid Anatomy.

The study of morbid anatomy and morbid histology has received a new impetus during the past year. This is particularly noticeable in England and the United States of America. The addition to *The British Journal of Surgery* of an atlas of morbid anatomy adds even greater attraction to a journal in which this subject has always received much consideration. The futility of attempting to discuss the phenomena of mental disease without first-hand knowledge of the structure and the function of the brain is being realized. Berry has recognized the importance of the organic factor in mental disease and strongly advocates researches into the developmental and histological phenomena associated with these diseases.

Difference of opinion exists concerning the best method of treating chronic cystic mastitis. Bloodgood holds that the disease is a reaction of both the epithelial and connective tissue cells of the breast to some low type of local or general irritant. It would consequently have a tendency to spontaneous return to normal. Cysts, whether single or multiple, are the commonest end-results of the lesions, but even the cysts which produce palpable tumours, usually disappear. He considers that removal of the breast, with few exceptions, is an illogical procedure. It is too drastic for the benign and not sufficient for the malignant lesions. A woman with chronic cystic mastitis, according to Bloodgood, runs no more risk of cancer than does any other woman. Leonard Cheatle does not agree with these views. He regards the presence of cysts in the breast as a very serious matter.

Hurst holds the view that certain diseases of the alimentary canal which have hitherto been regarded as the result of congenital malformations, such as idiopathic dilatation of the œsophagus or megacolon, are due to a failure of the coordinating mechanism by which the sphincters are relaxed. He maintains that the peristaltic waves passing down the tube are not followed by a relaxation of the sphincter. The obstruction is thus a functional one. It is not spasm, but an absence of spasm, achalasia as Hurst calls it, which is responsible for the obstruction. When the œsophagus is dilated and hypertrophied, the cardiac sphincter is at fault; when the colon is dilated and hypertrophied, the pelvi-rectal or anal sphincter fails to respond. No reason for this failure has been established. These opinions have received support notably by Mills in Australia. Elsewhere, however, they have not been accepted by some authorities. Wade has seen children at the ages of two and three weeks with Hirschsprung's disease. He thinks that the hypertrophy occurring at this age must be of developmental origin. Wade has recorded the notes of a child who had not had a normal action of the bowels since birth. The

child died when four months of age; at the *post mortem* examination the colon was found to be greatly dilated.

The cause of polycystic disease of the kidney has not been determined. Some observers regard the condition as inflammatory; others believe it to be of the nature of a neoplastic process, while others would trace it to congenital malformation. Cairns has been able to secure evidence on its occurrence in three successive generations of a family in the east end of London. This evidence, he submits, seems to establish the fact that polycystic disease of the kidneys is hereditary. The kidneys, liver and pancreas are the common sites of cystic disease, but Meyer has reported the finding of cysts in the omentum as well as in the kidneys and liver in identical guinea pig twins.

Keith Inglis has studied the pathology of two tumours in patients of Bell. These tumours were recognized as plexiform neuromata. In the one patient there was an association of three congenital abnormalities, macrodactylia, plexiform neuroma and multiple chrondromata. In the second patient there were bone tumours, possibly multiple chrondromata, a fibrolipoma and plexiform neuroma or neuro-fibromatosis. Inglis is inclined to the opinion that in these conditions the neuroma represents the primary and essential lesion, while the other lesions are secondary. He admits, however, that the evidence is insufficient to remove this opinion from the realm of conjecture.

The attack on the cancer problem appears to have been shifted somewhat. But a few years ago the greater part of the work was concentrated on animals in whom tumours had been implanted. During the past year or two more attention has been given to the histological aspects of neoplasms and to the biological and chemical characters of the cells in health and in disease. Reference is made in another chapter to the bacteriological or protozoological aspect. Some very promising investigations have been carried out in connexion with the biology of the cell, with the association of an alteration of the mineral content of cells of malignant growths and with changes in the physical characters of cells. Use has been made of tissue culture in this study.

Urology.

The survey of the progress made in each special branch of medicine during the past year is necessarily limited by the usually accepted definition of that specialty. In the case of urology a slight difficulty presents itself. The term would imply all that appertains to the diseases of the urinary system. In practice it is usually regarded as the study of those diseases of the urinary apparatus which are dealt with by surgical procedures. But even this restriction involves a certain amount of overlapping. The question of urinary antiseptics, for example, belongs properly to therapeutics; the study of the renal organs by means of X rays might be regarded as a function of the radiographer; the application of a test for the estimation of renal function is borrowed from the biological chemist. If the inclusion of some work and the exclusion of other investigations appears a little illogical, the fault lies in the arbitrary manner in which those who call themselves urologists, interpret their sphere of activity.

In regard to the purely operative aspect of urology, Thomson Walker has introduced a new method of approach for drainage or removal of the seminal vesicles. The operation is a transvesical one. An incision is made through the floor of the bladder and the vesicles are reached in this way. Resection of the seminal vesicles can be carried out by this route for carcinoma of the prostate involving the vesicles, provided that the condition has not advanced beyond the aid of surgery. For this purpose the median incision in the floor of the bladder is converted into a racquet-shaped figure by a ring around the internal meatus.

The results of operative measures for malignant disease of the prostate gland are still unsatisfactory. It has been found that the embedding of radium destroys the primary growth, but leaves the glandular involvement uninfluenced. Barrenger insists on an irradiation of the glandular areas with high voltage X rays before operation. He then destroys the main lymphatic trunks by

embedding radium needles through the floor of the bladder. At a later date he embeds radium into the prostate through the perineum.

It is claimed that radium treatment of carcinoma of the bladder yields good results. In a series without selection apparent cure was obtained in about 60% of the papillary type of carcinoma and in about 30% of the infiltrating type.

Malignant disease of the testis is a notoriously fatal condition. Dean has secured relatively good results by a combination of radiotherapy and surgery. He exposes the testis to low voltage X rays and the lumbar glands to high voltage X rays. A month later the testis is removed in the usual manner. The irradiation is repeated at intervals for a considerable time after the operation.

A condition called Hunner's ulcer of the bladder has hitherto resisted all forms of treatment. Removal, cystoscopic fulguration and bladder lavage have been tried. This condition is a localized chronic cystitis without infection of the urine. The workers at the Mayo clinic, however, have recently obtained better results from the intravenous injection of "Mercurochrome."

"Mercurochrome" has been used for some time in urology with satisfactory results. More recently it has been found that it is not only a powerful urinary antiseptic, but that it exerts an action on septic conditions elsewhere as well.

Another urinary antiseptic has been introduced by Veader Leonard. This is "Hexyl-Resorcinol." It is taken by mouth. It is stated that its action is more powerful than "Hexamine."

Diathermy is being widely applied to pathological processes of the urinary apparatus. Stern has devised an ingenious electrode which is introduced into the rectum. When opened in the rectum it covers more or less exactly the area of the prostate and seminal vesicles. Roucayrol records excellent results from diathermy in chronic gonorrhœal vesiculitis.

Ravich has advocated the use of 20% "Neosilvol" as a pyelographic medium. It acts as an antiseptic at the same time as it casts a dense shadow on the plate.

For renal nephralgia not caused by mechanical obstruction of the urinary outflow Legueu and Papin have employed the operation of denervation of the renal pedicle.

In regard to the estimation of the renal function, some highly interesting details have been given in this journal by Corkill on the utilization of the salivary index as a measure of the blood urea and consequently of the renal efficiency. The advantage of this test over the direct estimation of the urea content of the blood lies in the fact that it is easily carried out by the general practitioner. Another simple clinical test is one for the determination of the excretion of salt by the kidney. Strach injects sodium salicylate intravenously for this purpose and finds that it is reliable. Hitherto the only indication of the power of the kidney to excrete salt was the clinical observation of the degree of œdema.

Tait has published some original observations in connexion with urinary calculus and hydronephrosis. Bridge's article in this journal on the affections of the ureter is also deserving of mention.

Physiology.

As in recent years the action of "Insulin" and its relation to carbohydrate metabolism holds the field as the problem in physiology that has been attractive to a large number of workers. The mechanism of "Insulin" action is not yet clear. Mason and Matthew have demonstrated that "Insulin" reduces the blood sugar content independently of the central nervous system, the sympathetic nervous system and the parasympathetic nervous system. Burn and Dale have shown that "Insulin" can cause a rapid disappearance of glucose from the circulation without any alteration in the respiratory quotient and without the consumption of oxygen sufficient for the oxidation of the sugar lost. It cannot be supposed that the conversion of glucose into a reactive form by the liver under the influence of "Insulin" could account for the disappearance of the glucose, although several workers have claimed this. Secker makes the interesting suggestion that "Insulin" increases the permeability of cell membranes, so that the decrease in the sugar content of the blood without

a concomitant rise in the oxidation of sugar observable after the injection of "Insulin" may be due to the passage of the sugar into the tissues, especially muscle. He has shown that the erythrocytes actually become more permeable to glucose after "Insulin" treatment and assumes that "Insulin" has a similar effect on tissue cells generally.

Chaikoff, Macleod, Markowitz and Simpson have found that the percentage amounts of sugar and ketone bodies in the blood are decidedly higher in fat depancreatized dogs several days after "Insulin" and food have been discontinued than in thin dogs. Fat animals survive the withdrawal of "Insulin" for a much shorter period of time than thin animals and succumb to symptoms not unlike those of diabetic coma in man.

Bainbridge has shown that rats and mice fed on a diet devoid of carbohydrate and containing an increased amount of fat,, develope a high degree of resistance to "Insulin."

Collip has carried out some important researches on the parathyreoid hormone. He has prepared an extract from the parathyreoid bodies which in his opinion represents in potent form the active principle of the parathyreoid. Tetany can be prevented or controlled by this extract and successive injections have produced a profound hypercalcæmia with disturbing symptoms.

Conflicting opinions are held in regard to the action of extract of the pituitary gland on renal secretion. As a result of experiments on anæsthetized and unanæsthetized animals, Stehle and Bourne have concluded that the pituitary gland has a definite function in determining the secretion or conservation of water and chlorides and possibly other constituents of urine. When water or chlorides are being secreted slowly, pituitary extract increases the rate; when either or both are being secreted rapidly, the extract has the opposite effect.

Katz has demonstrated that the right ventricular systole does not coincide in point of time with the left ventricular systole; the same applies also to their ejection phases. The duration of the contraction processes varies independently in the two ventricles. The *T* wave of the electrocardiogram is explained by this asynchony. Meek has studied the effect of varying rates of the heart beat in dogs on the diastolic size of the heart. He has found that the diastolic size decreases as the rate increases. Beyond a rate of 110 the diastolic size undergoes a very rapid decrease.

Hickson and McSwiney have been able to demonstrate that variations in the blood pressure in vessels resulting from change of posture have a considerable effect on the pulse wave velocity. In timing the arrival of the pulse wave at the wrist, asynchrony may be found, if there is a difference between the positions of the arms. Asynchrony of the two pulses when the external conditions are identical, indicates an alteration in the pressure in one artery with delayed transmission of the pulse wave.

Wearn and Richards have conducted some very important work on renal secretion. By a delicate and ingenious method, they have obtained glomerular urine in frogs and have compared it with bladder urine. They have presented the first clear and definite evidence of the reabsorption of substances in the tubules from the fluid filtered through the glomeruli.

Roaf has devised a method of expressing colour blindness in numerical terms. By requiring a colour-blind person to copy the colours of a painted diagram, the wave lengths of that part of the spectrum that is not recognized, can be ascertained.

Sabin and her collaborators have made some highly interesting observations on the rhythmical variations of the leucocytes in health. They have discovered that normally the number of active leucocytes circulating in the blood is greater during the afternoon and that there is an hourly rhythm. The suggestion thrown forward is that increases in active or motile leucocytes follow and replace showers of non-motile or dying leucocytes. The full significance of the diurnal variations has not been disclosed, since the studies were carried out on a small number of healthy individuals. Before far reaching deductions are drawn from these observations, it will be necessary to ascertain the extreme range of each type of cell and to determine the factors on which the variations depend.

Abstracts from Current Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

The Ætiology of Acute Rheumatic Fever.

B. J. CLAWSON (*Journal of Infectious Diseases*, May, 1925) reports the results of an investigation into the ætiological factor in acute rheumatic fever. The organisms studied were isolated from twenty cases of acute rheumatic fever, rheumatic endocarditis or chorea. All except seven of the organisms were isolated from the blood before death and two were isolated from rheumatic joints. The patients from whom the organisms were recovered, were in the second or third decades of life except in one instance. The patient in this case was a baby a few days old whose mother was affected by acute rheumatic fever a short time before delivery. Similar organisms were isolated from the baby's joints and the mother's blood. The joints were involved in all of the twenty patients and the heart in all but four of them. The temperature seldom went above 38.9° C. (102° F.) and the hæmoglobin value did not drop below 80% while the red cells were usually normal in number. The average leucocyte count was fifteen thousand per cubic millimetre. Death occurred in six instances. In the collection of blood for bacteriological examination attention was paid to certain details. The amount of blood collected was usually fifty cubic centimetres. It was placed in two large sterile test tubes and allowed to clot. When firm the clots were loosened and put into flasks containing two hundred and fifty cubic centimetres of dextrose beef infusion broth, P_H 7.6, and incubated at 37° C. for several days. The usual time before organisms were recovered from these cultures was ten days and in one case the period of incubation was nearly a month. Most of the strains of streptococci when first isolated were arranged as diplococci with the individual cocci elongated in the long axis of the chain. They tended to be lance-shaped, were insoluble in bile, did not ferment "Insulin" and did not possess capsules. Spontaneous agglutination in the broth cultures was common. When first isolated the strains did not produce a green discoloration on blood-agar plates, but after a period of cultivation this capacity was acquired. The organisms were found by agglutination tests to fall into two groups. Twelve of the twenty strains of streptococci isolated were tested in rabbits. Nine produced endocarditis and in two typical joint lesions developed. From the fluid in these joints organisms similar to those injected into the rabbits were recovered in large numbers in pure cultures. The cardiac lesions were similar to those found in human patients. The author considers that it is highly probable that rheumatic endocarditis and subacute bacterial endocarditis may be produced by the same agent and are to be regarded as different degrees of the same process.

Flocculation Reactions with Immune Sera Produced by Injections of Organ Emulsions.

J. VAN DER SCHEER (*Journal of Immunology*, June, 1925) concludes that injections with organ emulsions readily produce flocculating immune serum. The extracts were prepared as follows: Ten grammes of finely ground organs were extracted with fifty cubic centimetres and again with twenty-five cubic centimetres of 95% alcohol over night at room temperature. The mixed alcoholic extracts were evaporated to a volume of twenty-five cubic centimetres. After cooling to room temperature this solution was filtered and was further diluted with alcohol to twice its volume. To one cubic centimetre of this fluid five cubic centimetres of saline solution were added drop by drop with constant shaking which gave a homogeneous stable emulsion. For the flocculation tests equal parts of the emulsion and diluted immune serum were allowed to stand in the incubator for twenty hours. Some animals produced active serum after three injections, but much of the serum was collected after four or five injections. Differences were observed in the flocculation of the immune serum, but it still remains to be determined whether the differences are of a quantitative or qualitative nature. It was noted that reactions with extracts of organs from the same animal species (rabbit) which was used for the injections, were obtainable.

Scarlet Fever Toxin and Antitoxin.

WILLLIAM H. PARK AND ROSE GOLDSCHMIDT SPIEGEL (*Joural of Immunology* September, 1925) publish a preliminary report on the complexity of scarlet fever toxin and antitoxin. Williams had shown that hæmolytic streptococcci could be isolated from erysipelas, infected wounds and normal throats and that these produced toxins similar to those isolated from the majority of patients with scarlet fever, but that other strains from these sources produced toxins which varied in a greater or less degree from those produced by the ordinary scarlet fever streptococci. The authors noted that an amount of antitoxic serum which would neutralize toxin in the majority of children, would fail in others and that serum from different immunized horses would sometimes vary in the ability to neutralize a toxin in the same child. These observations suggested that the scarlet fever toxin filtrate produced by a single strain was not a single toxin but a group of toxins and that a person might be immune to one or more of the component toxins and yet susceptible to others. The authors suggest that a scarlet fever serum from a single convalescent patient may fail to cause blanching in a true case of scarlet fever because the two cases are due to two strains differing in at least one toxin and in one induced antitoxin. Also it appears likely that some strains of streptococci with the power to cause scarlet fever produce toxins which are quite different from the standard Dick strains, so that after recovery from infection due to one strain a second infection from the other strain might occur. In view of these findings it is not considered safe at the present time to limit the diagnosis of scarlet fever to cases due to the usual strains making the standard group of toxins. Cases not responding to serum therapy should be carefully studied so that the nature of the causal strain may be determined.

The Agglutination Reactions of the Diphtheria Group of Organisms.

G. HOWARD BAILEY (*Journal of Immunology*, September, 1925) reports the results of the study of the immunological relations of the diphtheria group of organisms. From previous observations it was evident that, so far as antitoxic immunity is concerned, virulent toxin-producing diphtheria bacilli can be definitely separated from avirulent diphtheria bacilli, the bacillus of Hoffmann and *Bacillus xerosis*. The serum used in the experiments was obtained from guinea pigs which had received numerous subcutaneous injections of broth cultures of avirulent diphtheria bacilli, *Bacillus xerosis* and the bacillus of Hoffmann. Weekly injections of 2·5 cubic centimetres to five cubic centimetres of the broth cultures had been made over a perioid of six months to fifteen months and seven days after the last injection the animals were bled from the heart. Agglutination by the macroscopic method was carried out. It was found that agglutinative serum for avirulent diphtheria the bacillus of Hoffmann and *Bacillus xerosis* may be produced in guinea pigs and the agglutination reactions indicate a general relationship among these organisms. Definite subgroups were not evident. No relationship was found between a considerable number of strains of avirulent diphtheria bacilli and a limited number of strains of virulent diphtheria bacilli, bacilli of Hoffmann and *Bacillus xerosis*.

A Pathogenic Strain of Bacillus Subtilis.

H. C. SWEANY AND MAX PINNER (*Journal of Infectious Diseases*, October, 1925) report the recovery of a pathogenic strain of *Bacillus Subtilis* from several lesions and body fluids of a patient suffering with chronic tuberculosis. When first isolated the bacillus grew only on a medium containing blood and was hæmolytic. It was pathogenic to white rats producing in these animals lesions similar to those found in the patient from whom the organism was

isolated. *Bacillus subtilis* was recovered in pure culture from the abscesses and heart's blood of the inoculated rats. Eventuallly the organisms grew rapidly and luxuriantly on ordinary media, became less hæmolytic, were not pathogenic to white rats and were in no characteristics atypical.

HYGIENE.

Street Sanitation and Disease.

C. MILNE (*The World's Health*, August, 1925) holds that dust, even though free from pathogenic microorganisms, will when inhaled for a long time irritate the lungs and air passages, making them more susceptible to the invasion of the organisms of disease. If the dust contains the organisms of pulmonary tuberculosis or summer diarrhœa, the chances of disease being produced are increased. Dust prevalence should, therefore, be abated in the interests of public health and the sweeping of unsprinkled streets should be regarded as a crime. Water carts are used extensively in Great Britain. The author points out that the use of disinfectants mixed with the water has very little value, while in the home the most sanitary and ideal method of cleansing is by the vacuum cleaner. Another aspect of street sanitation which demands attention, is the removal of refuse deposited in bins outside houses. If the bins are without lids, the contents are often blown about the street on a windy day. While the bins are being emptied into the refuse carts a certain amount of dust is usually blown about, especially if the cart is open at the top. The remedy the author suggests is the method used in Lausanne. The cover of the refuse cart is divided into squares, each of which is the size of the bin, and has a lid in two pieces. The bin also has a sliding lid and when the bin is inverted over a square the lid falls away and the refuse falls into the cart. The two lids are then shut and the bin replaced. There can be no dust as both bin and cart are shut off from the air. Since there are a number of squares the refuse can easily spread over the surface of the cart until it is full. Another important factor in street sanitation is the width of the street. Microorganisms like only dark and stagnant places and wide streets allow plenty of sunlight and fresh air to act on the houses and the street itself. Some diseases are more prevalent in hot and dry weather, when the streets are dusty. The most important of these diseases is summer diarrhœa of children. Although it is noteworthy that street sweepers and coachmen, in spite of exposure to excessive inhalation of dust, are not excessively liable to tuberculosis of the lungs, the chance of infection must not be overrated and the continued irritation of the air passages by dust produces a greater liability to bronchitis and pneumonia. The author concludes that it will be seen from the foregoing that good street sanitation is one of the links in the chain of public health measures and while each item may appear relatively unimportant, taken together, they have considerably reduced the amount of disease in the past and will assuredly continue to do so in the future.

Acute Dermatitis Among Painters.

J. A. TURNER (*Journal of Industrial Hygiene*, July, 1925) makes a report based on the clinical study of five patients, painters, who reported for relief from a troublesome skin eruption, and also on certain animal experiments which he conducted to ascertain the substance or substances responsible for their disability. The painters concerned used the ordinary hand brush and during work the paints and solvents often soiled their hands and arms. At the close of the working day a favourite method for removing the paint from the hands and arms is to use turpentine, thinner or naphtha. Certain of the men, when questioned, admitted the possibility of carelessness in thoroughly washing the hands in the fresh water after using the paint solvents, especially when in a hurry. There are, the author points out, a number of paint substances and solvents used by these men in their work, namely turpentine, naphtha, white paint, iron filler, thinner and sealer. As regards their constituents turpentine is bought as commercial turpentine; the white paint is a composition of zinc oxide, white lead and solvents; the iron filler is a mixture of carbon black, petroleum and turpentine; the thinner is made at the plant by the painters and consists of equal parts of turpentine and naphtha and the sealer is composed of drop black with petroleum as a thinner. As regards the eruption it generally involved the backs of the hands and forearms as far as the elbows, being especially pronounced on the inner surface of the wrists. Its appearance was usually abrupt, the skin becoming dry and irritated. Within twenty-four hours small blisters formed, they were filled with clear fluid which later became turbid. The irritation was always intense. Applications of a 1 in 1,000 solution of potassium permanganate always led to a cure in ten days. The evidence obtained from the patients presenting themselves pointed to the solvents used as the causal factors in the production of the skin eruption. It was thought that animal experiments might show which solvent could be charged with causing the trouble. To this end guinea pigs were prepared and daily applications of the solvents were made to clipped areas of skin for twenty-five successive days. It was found that all the substances used produced erythema and irritation with loss of the hair over the area covered. In the control animals the solvent was applied for one hour and then removed with turpentine or naphtha, the area was thoroughly washed with soap and water, rinsed with clear water and then carefully dried. These animals manifested no skin reaction at all. When the applications of the paints or solvents were discontinued on the animals they quickly returned to normal. In conclusion the author points out that paint solvents (turpentine, thinner and naphtha being the chief offenders) are capable of producing a dermatitis unless proper care is taken in removing them from the skin. This is best accomplished by the use of soap and water and carefully drying the skin. Further, workmen who handle and use paints and paint solvents, should be advised as to their possible effects on the skin and shou'd be instructed how to make themselves clean at the close of the work period.

An Effective Method of Conducting Experiments on Dust Inhalation.

CECIL K. DRINKER, PHILLIP DRINKER and KATHERINE R. DRINKER (*Journal of Industrial Hygiene*, November, 1925) point out that two difficulties arise when attempts to deposit dust in the lungs of animals are made. The first is due to the extraordinary degree to which animals, especially rodents, are protected against the entrance of dust. When placed in an atmosphere of non-irritating dust such as carbon, they sit quite still and reduce their breathing to a minimum and this, combined with the great filtering power of the upper part of the respiratory tract of these animals, results in a surprisingly efficient exclusion of dust. In the second place and as a result of the first difficulty, either long exposures or very dusty atmospheres must be used and the authors hold that it is a hopeless task to keep dust clouds uniform in concentration and composition over long periods. The method used by the authors allows short periods of exposure and causes the dust to enter the alveoli evenly and thoroughly. It consisted in the simple expedient of combining the dust cloud with 10% carbon dioxide. This causes a great increase in breathing and prevents the animals from protecting themselves to the degree ordinarily possible. In their experiments carbon dust was used and in an animal killed immediately after three and one-quarter hours' inhalation of carbon and 10% carbon dioxide the lungs were a light grey colour and on section the small aggregates of carbon dust were distributed through the alveoli with great uniformity. In another animal submitted to the same length of exposure but killed after three days the carbon particles had undergone phagocytosis or were within the lung tissue. In conclusion it is pointed out that the concentration of carbon dioxide employed is not harmful to animals though dangerous to man. For reasons never understood, cats and rabbits are able to breathe very high concentrations of carbon dioxide for long periods. Violent breathing always occurs and anæsthesia and some incoordination may result, but if the oxygen supply is high, death will not take place.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal North Shore Hospital, St. Leonard's, Sydney, on September 10, 1925. The meeting took the form of a series of demonstrations by members of the Honorary Staff.

Exophthalmic Goitre.

DR. R. S. E. TODD showed a female patient, aged fifty-one years, a widow, who had been admitted to hospital complaining of breathlessness for nine months and of prominence of the eyes for six weeks. The patient's father and mother had died at the ages of fifty-three and sixty-seven respectively from what was diagnosed as heart disease. The patient had suffered from measles. For two years prior to admission she had been very nervous, easily irritated and frightened. During the preceding nine months she had been breathless on exertion and very easily tired. During the few weeks prior to admission she had become much worse and had found it necessary to abandon her work. The patient's appetite was poor, she complained of neither nausea nor vomiting. She had slept badly during the preceding two years.

On examination exophthalmos was found to be prominent. Tachycardia and tremor of the fingers were present. Slight generalized enlargement of the thyreoid gland was seen. Von Graefe's sign was present and Stelwag's sign was also noticed, but not to any considerable extent. The apex beat of the heart was in the fifth intercostal space. The cardiac dulness was normal. The heart sounds were regular, their tone was good and no accompaniments were present.

Enlargement of the Tonsil.

Dr. Todd also showed a patient, aged thirty years, who complained of pain in the back and sore throat. As a result of a throat swabbing staphylococci, streptococci and the *Micrococcus catarrhalis* had been found. Removal of the tonsils was advised.

Pulmonary Tuberculosis.

Dr. Todd's third patient was a male, aged twenty-five years, a carter, who had been admitted to hospital on June 5, 1925, complaining of pain in the chest and breathlessness. The breathlessness had followed a severe cold three weeks previously. It had been followed by cough, pain in the chest and sputum which was white and frothy and amounted to about a quarter of a cupful a day. On physical examination extensive abnormal sounds were audible in both lungs. Tubercle bacilli had been found in the sputum. The radiologist had reported the presence of tuberculosis of both lungs together with old and extensive thickening of the right interlobar pleura and partial pneumothorax of the left side.

Non-Tuberculous Consumption.

DR. W. C. B. HARVEY showed two patients whose condition he described as non-tuberculous consumption. The first was a man, thirty-six years of age, a plumber, who had been admitted to hospital on November 27, 1924, complaining of cough with fœtid expectoration of two and a half weeks' duration. The illness had commenced suddenly with an attack of harsh coughing which lasted for half an hour. Attacks of coughing had occurred at intervals up to two hours. This had been followed by very offensive expectoration which was worse at night. Slight pain had been present in the right side of the chest for one day. On admission impaired resonance and weak breath sounds had been audible in the right axilla together with crepitations. The patient had been examined by X rays on November 28, 1924, and the radiologist had reported the presence of an area of dulness along the lateral aspect of the upper part of the right side of the chest. The dull area had a sharp concave border and the appearance had suggested the presence of an old pneumonia with localized empyema high up on the lateral aspect of the chest. The patient had manifested an evening rise of temperature and hæmoptysis had occurred on December 27, 1924. A further hæmoptysis had occurred on April 29, 1925. By June 15, 1925, abnormal signs had been absent from the chest, no pyrexia had been present, but fœtor of the breath, occasional cough and slight sputum had been noticed. The patient had felt fairly well and had gained weight.

Several radiological examinations had been made. On March 20, 1925, the whole of the right apical region had been dull and the appearance in the lower portion had suggested tuberculosis. Much pleural thickening had been present. On June 19, 1925, the radiologist had reported that mottling in the right apex suggested tuberculosis.

The sputum had been examined repeatedly. On December 3, 1924, streptococci, *Micrococcus catarrhalis* and *Staphylococcus aureus* had been isolated. On December 12, 1924, *Micrococcus catarrhalis* and staphylococcus only had been found. On May 5, 1925, no tubercle bacilli had been discovered, but *Micrococcus catarrhalis*, pneumococci and staphylococci had been present. On May 16, 1925, no tubercle bacilli had been found, but *Micrococcus catarrhalis* and streptococci had been isolated. Dr. Harvey pointed out that the cough and sputum were still present and that the latter was offensive. The patient's general condition was good and no abnormal signs were discoverable in the chest. The latest skiagram revealed the presence of fibrosis at the right apex.

The second patient shown by Dr. Harvey was a bootmaker, aged forty-two years, who had been admitted to hospital on August 26, 1925, complaining of cough and offensive sputum of nine months' duration. The family history contained nothing of importance and the patient had previously suffered from nasal catarrh. The patient's illness was of nine months' duration, but he had become worse during the preceding six weeks. The cough was worse at night time. Sputum was profuse and offensive. Three weeks prior to admission he had suffered from hæmoptysis every day for one week. He had lost 6·3 kilograms (one stone) in weight. He complained of dyspnœa on exertion and of night sweats during six weeks. His voice had become hoarse. By an examination of his chest on August 4, 1925, deficient movement had been discovered at the left base and also impaired resonance in the left axilla with bubbling râles and weak breath sounds. The radiologist had reported that appearances suggested the presence of an abscess in the base of the left lung. On admission to hospital diminished resonance had been found to the left of the angle of the scapula, but no other abnormal signs had been discovered. The other systems had been clear. On September 4, 1925, the radiologist had reported definite increase in mottling of a chronic type, especially in the right lung, mainly due to chronic bronchitis. In several areas in the right lung in the vicinity of the hilum the appearances had been suggestive of a superadded tuberculosis. No tubercle bacilli had been found in the sputum. The patient was undergoing tests by tuberculin.

Pulmonary Tuberculosis with Spontaneous Pneumothorax.

Dr. Harvey also showed a male patient, aged thirty-eight years, a baker, who had complained of cough for the previous twelve months. The cough had been worse at night time and early in the morning. A thick greenish sputum had been present and hæmoptysis had occurred three times during the preceding three months. Dyspnœa had been present on exertion. The patient had lost weight up until six months previously and had not complained of night sweats for some considerable time. Three weeks prior to admission the patient had experienced sudden severe pain in the left shoulder region accompanied by dyspnœa for three days. The temperature had varied from 38·3° to 38·9° C. (101° to 102° F.). Examination on admission had revealed the signs of pneumothorax at the left apex. X ray examination revealed the presence of partial pneumothorax of the left side which was more noticeable at the apex. In addition extensive mottling

and density were present and irregularities suggested old and recent tuberculosis with at least one old cavity in the upper part of each. Tubercle bacilli had been found in great numbers in the sputum.

Osteosarcoma of the Pelvis.

DR. F. W. DOAK showed a female patient, aged twenty-seven years, who was born in Cobar and had lived there all her life. She had three children, had not had any miscarriages and had suffered from no previous illness. On admission the patient had complained of pain in the region of the left hip. It had been present for thirteen months, had varied in intensity and was worse at night, becoming gradually more severe. For six weeks prior to admission she had been unable to walk. Swelling in the region of the left hip had been present for one week. Examination on admission had shown that the patient was very fat. Considerable swelling of the lateral aspect of the left thigh and of the left iliac fossa had been present and the patient had complained of tenderness over the left iliac crest. An exploratory incision over the lateral aspect of the thigh had revealed no abnormality, but an incision over the left iliac fossa had revealed the presence of an inoperable tumour apparently originating from the iliac bone. The patient's serum had not reacted to the Wassermann test. As a result of a blood count a neutrophile leucocytosis had been found. A radiological report had been received to the effect that a large osteosarcoma of the ileum was present.

Fracture of the Skull.

DR. E. M. HUMPHERY showed a male child, aged six years, who had been knocked down by a motor car on June 30, 1925. On examination the boy had been unconscious and restless. A fracture of the skull had been palpable above the left ear. No bleeding had occurred from nose, ear or mouth. Tenderness had been present on pressure over the left side of the forehead and in front of the left ear. X ray examination had revealed a horizontal fracture involving the left parietal and occipital bones. On July 1, 1925, the skull had been trephined in the left temporal region. Blood and lacerated brain substance had escaped. The child had made an excellent recovery and had been discharged from hospital on August 5, 1925.

Arthritis Deformans.

DR. W. W. INGRAM showed a male patient, aged fifty years, whose right knee had been ankylosed in a slightly flexed position for eleven years. Two months previously an acute exacerbation of pain had occurred and this had been accompanied by swelling and stiffness in the right shoulder, elbow, wrist and third and fifth fingers. All endeavours to find a focus of infection had been fruitless. The treatment had included the administration of guaiacol carbonate, iodide of potash, salicylate of soda, hexamine and thyreoid extract. Colonic lavage had been given and *Bacillus coli communis* vaccine had been administered in addition to an autogenous vaccine prepared from streptococci isolated from the tonsils. Six weeks previously the patient had been put on a dry carbohydrate free diet and one hundred and twenty cubic centimetres (four ounces) of a 0·4% solution of hydrochloric acid had been given immediately after each meal. Since the institution of this treatment continuous improvement had occurred.

Dr. Ingram in showing this patient referred to a communication by Ashcroft which had appeared in *The British Medical Journal* in June, 1925. In discussing infective arthritis Ashcroft had expressed the opinion that hypochlorhydria or achlorhydria was frequently present and that the patient suffered from a low carbohydrate tolerance.

Paroxysmal Tachycardia.

Dr. Ingram also showed a female patient, aged twenty-eight years, who complained of attacks of breathlessness and suffocation since 1918. The patient had suffered from influenza in 1918 and had been in bed for two months. She had suffered from "kidney trouble" at her last pregnancy and had been blind for two days. She had suffered from many attacks of "heart trouble" and had been treated on this account in several hospitals. On admission the patient had complained of palpitation, dyspnœa, abdominal distension and nausea. On examination the apex beat had been found in the fifth intercostal space 11·25 centimetres (four and a half inches) from the middle line and outside the midclavicular line. A soft systolic murmur had been audible at the apex and it had been propagated for a short distance into the axilla. The radial artery had not been palpable and the blood pressure had been so low that it could not be recorded by the sphygmomanometer. Since admission to hospital the patient had had several attacks of tachycardia varying in duration from two to six hours. During these attacks the pulse rate increased suddenly from about ninety to one hundred and twenty or one hundred and thirty per minute and the respiratory rate increased from about twenty to between thirty and forty-five in the minute.

Septal Graft.

DR. W. R. BEAVIS showed a male patient, aged twenty-six years, who had suffered from an abscess in the nose nine years previously. The nose had been swollen for a couple of days and the bridge had subsequently become sunken. Dr. Beavis had performed a plastic operation and had corrected the deformity by using a piece of the seventh costal cartilage.

Bilateral Winged Scapulæ.

DR. S. R. SCOUGALL showed a male patient, twenty years of age, a plumber, who suffered from bilateral winged scapulæ caused by anterior poliomyelitis. The patient had been shown at a previous meeting of the Branch and Dr. Scougall said that he showed him again in order to demonstrate the result of operative treatment. On each side the sternal portion of the *pectoralis major* muscle had been removed from its insertion into the humerus and inserted through an opening made in the inferior angle of the scapula. The operation on the right side had been performed on October 20, 1924, and that on the left side on June 15, 1925. The nerve supply to the muscle seen in the dissection had not appeared to be unduly stretched and no strain had been required to secure the new insertion with the arms stretched straight above the head in full flexion. This position had been maintained in the postoperative period by plaster of Paris. After eight weeks the arm had gradually been allowed to come down to the side. Dr. Scougall pointed out that the improvement in function was more pronounced on the left side. The patient was able to put the arm straight above his head. He said that he was much better off and felt quite different. Dr. Scougall pointed out an interesting feature in the fact that the patient's new movement was more readily accomplished the first few times when he was holding a weight. After that he was able to perform the movement without the weight. Initiation of the movement was impossible without the weight. Dr. Scougall suggested that holding the weight caused a contraction of the transplanted muscle as in its original capacity and that this contraction initiated the new movement which the patient was able to carry out after it had been initiated. It was to be noted that the excessive upward and forward rotation of the scapula still remained, throwing greater work on the transplanted muscle and putting it at a disadvantage by over-stretching. With this disadvantage an effective contraction was not obtained, but Dr. Scougall thought that a tenodesis would obviate the difficulty. A piece of *fascia lata* might be fixed at the superior angle of the scapula and brought obliquely downwards and inwards to meet a similar band from the other side of the supraspinous ligament. This would not interfere with the action of the transplanted muscle, but would prevent its over-stretching in relaxation and impose less work upon it.

Congenital Talipes Equino-Varus.

Dr. Scougall's second patient was a boy, aged eight years, who had suffered from severe congenital *talipes equino-varus*. The sole of the foot had never been put to the ground. On March 1, 1925, Dr. Scougall had performed a stabilization operation as carried out by Naughton

Dunn. The *tibialis anterior* tendon had been transplanted to the outer side of the middle line. The foot balance was good. The patient had full function at the ankle joint and could run vigorously.

Spinal Curvature.

Dr. Scougall also showed a girl, aged thirteen years, who suffered from an upper thoracic C-shaped curvature on the right side. This had first been noticed three years previously. The scoliosis had gradually progressed in spite of one year's corrective exercises and the use of ambulatory jackets. Circumstances had not permitted the adoption of long recumbent treatment. In view of the increasing breathlessness, the patient's history had been submitted to Hibbs who agreed that his fusion operation was indicated. This operation had been performed on February 12, 1925, nine vertebræ being involved in the procedure. At the end of two weeks some correction had been sought by means of a plaster jacket (applied with the patient in the recumbent position) and longitudinal traction. This attempt at correction had not been forced. Ambulatory jackets had been worn for six months and at the time of demonstration the patient was wearing a light celluloid corset which it was intended shortly to discard. The child was able to go long walks without becoming tired or breathless. Pain had disappeared and the patient had become more confident. Prevention of further deformities rather than correction had been the aim of the operation. Skiagrams taken at various stages were shown.

Loose Body in the Knee Joint.

Dr. Scougall's next patient was a man, aged twenty-four years, a labourer, who had complained of a locking of the right knee with pain and effusion at various times during the previous eighteen months. Radiological examination had revealed a loose body with two centres of ossification in the antero-lateral portion of the joint. In view of the mobility of the loose body, the patient's inability to manipulate it close to the surface and the possibility of accompanying derangements, the loose body had been removed after a full exposure was secured by splitting the patella in a longitudinal direction. No other abnormality had been found in the joint. Recovery had been uninterrupted and complete. Dr. Scougall pointed out that there was no general agreement as to the ætiology of such loose bodies.

Polycythæmia.

DR. J. L. T. ISBISTER showed a female patient, aged thirty years, who was suffering from polycythæmia. The patient had been shown at a previous meeting of the Branch (see THE MEDICAL JOURNAL OF AUSTRALIA, December 2, 1922, page 655). Dr. Isbister drew attention to several subcutaneous hæmorrhages and pointed out that the patient was in practically the same condition as she was when he had previously shown her.

Hydatid of the Lung.

DR. F. GUY GRIFFITHS showed a male patient aged thirty-two years, who had been gassed in August, 1924, by fumes of Stockholm tar. The patient had suffered from anuria for thirty-six hours. This had been followed by cough and blood-stained sputum and the expectoration of about a pint of tar-smelling water. In addition to the cough and hæmoptysis, dulness had been present at the right base together with râles, bronchovesicular breathing and a friction rub. No tubercle bacilli had been found in the sputum and no reaction had been obtained to four injections of tuberculin. Laminated membrane and one hydatid hooklet had been found in the sputum. Dr. Griffiths showed two interesting skiagrams. In one a ruptured cyst could clearly be seen and in the other picture this shadow was absent. The contents of the cyst had been expectorated. A round unruptured cyst could be seen on the left side just above the heart. The patient was being treated by the oral administration of calcium and by antiseptic inhalation.

Aplastic Anæmia.

Dr. Griffiths's second patient was a woman, aged thirty-seven years, who had been admitted to hospital on July 4, 1925. She had complained of giddiness, headaches and faintness, breathlessness, palpitation, swelling of the ankles and puffiness of the lower eyelid, pain in the chest, indefinite pains in the abdomen, scalding pain on micturition, pains in the legs and arms and numbness of the hands. The patient had been in the Royal North Shore Hospital, from December 17, 1924, to February 9, 1925. Previous to this she had been under treatment for pernicious anæmia. After discharge from hospital in February, 1925, the patient had felt very well and two months before admission she had become ill again.

On December 12, 1924, the erythrocytes had numbered 1,800,000 per cubic millimetre, the hæmoglobin value had been 12% and the colour index 0·33. The leucocytes had numbered 3,780 per cubic millimetre. No nucleated red cells or myelocytes had been seen and no definite anisocytosis or poikilocytosis had been found. On discharge from hospital the number of erythrocytes per cubic millimetre had been 4,340,000 with a hæmoglobin value of 35% and a colour index 0·4.

On admission to hospital in July, 1925, the patient had been very anæmic. No abnormality had been detected in the circulatory or respiratory systems on clinical examination. The liver had been slightly enlarged, but no increase in the size of the spleen was found. A blood count made on July 6, 1925, had yielded the following result: Erythrocytes 2,380,000 per cubic millimetre, hæmoglobin value 15%, colour index 0·3, leucocytes 6,000 per cubic millimetre, polymorphonuclear cells 50%, large lymphocytes 18%, small lymphocytes 26%, large mononuclear cells 3% and eosinophile cells 3%. Definite anisocytosis and poikilocytosis had been found. No nucleated red cells or megalocytes had been seen. Some diffuse polychromasia, but no punctate basophilia had been found and no myelocytes had been seen.

A blood count made on July 21, 1925, had yielded the following result: Erythrocytes 3,490,000 per cubic millimetre, hæmoglobin value 35%, colour index 0·5%, leucocytes 5,625 per cubic millimetre. Some anisocytosis, poikilocytosis and punctate basophilia and a few megalocytes had been found. No nucleated red cells or myelocytes had been found.

A blood count made on August 8, 1925, had yielded the following result: Erythrocytes 4,500,000 per cubic millimetre, hæmoglobin value 52%, colour index 0·57, leucocytes 4,375 per cubic millimetre. Definite anisocytosis and poikilocytosis had been found.

The patient was being treated with iron, arsenic and hydrochloric acid.

Hodgkin's Disease.

Dr. Griffiths also showed a male patient, aged fifty years, who was suffering from fever, emaciation, weakness and swelling of the glands of the neck. The patient had been shown at a previous meeting of the Branch (see THE MEDICAL JOURNAL OF AUSTRALIA, January 17, 1925, page 70). When shown in 1924,, the patient had nearly recovered from swelling of the lymphatic glands of the right side of the neck, in the axillæ and the groin, from enlargement of the liver and spleen and from fever. The improvement had been effected by the administration of arsenic and iodide of potash.

Gangrene of the Leg.

DR. H. S. CAPPER showed a male patient, aged fifty-eight years, who was suffering from gangrene of the foot. He had been admitted to hospital on the day preceding the meeting. Fifteen days previously the patient had been seized with a severe attack of "cramps" in the left leg while lying in bed. The patient had gone to town next day, but had returned owing to the left foot "going cold." The patient had called in a doctor the following day on account of intense pain and swelling of the leg from the knee downwards. Electrical treatment, hot air and massage had relieved this swelling, but not the pain. Eight days after the onset of the "cramps" the patient had

noticed discoloration of the skin on the anterior surface of the foot near the ankle joint. From here the discoloration had spread distally to the foot and toes and slightly in a proximal direction. The patient was a heavy smoker and drank eight or nine "whiskies" a day. He admitted a Neisserian infection thirty years previously, but gave no history of syphilis. The patient had suffered from no previous illnesses, but had been operated on for hæmorrhoids and *fistula in ano* six years previously.

On examination the left foot was seen to be swollen, cold and discoloured as far in a proximal direction as the malleoli. Purplish above, the colour faded to a mottled white towards the toes. The terminal phalanx of each toe was dry, brown and shrivelled. Some movement was present in the toes and at the ankle joint. Above the cold, purplish area was a narrow, irregular white band encircling the lower third of the leg. Above this again was an area from five to seven and a half centimetres in depth which was hyperæmic, red and hot as compared with the more distal parts. Sensation was impaired, but not totally destroyed in this area. The heart was normal and no excessive senile changes could be found in the arteries. The systolic blood pressure was 115 and the diastolic pressure 90 millimetres of mercury. The blood sugar concentration was 0·116%. The tongue and fauces were normal. The patient did not complain of excessive thirst or hunger. The abdomen was soft and moved freely with respiration. No enlargement of liver or spleen could be detected. The respiratory system was normal. On examination of the nervous system it was found that the pupils were equal and reacted to light and accommodation. The knee jerks were exaggerated and with the exception of the sensory disturbances in the gangrenous area no abnormal nervous signs could be discovered. The patient did not complain of frequency or pain on micturition. On admission the urine had been acid, its specific gravity had been 1022, it had contained a "trace" of sugar and no albumin, acetone or diacetic acid had been found. Microscopical examination had revealed urates only; no casts, red blood cells, pus cells or organisms had been found. The urine had been sterile on culture. On the day of demonstration the urine was normal.

Herpes Zoster of the Eye.

DR. E. C. TEMPLE SMITH showed a male patient, aged eighty-three years, who was suffering from *herpes Zoster* of the left eye. He pointed out that the appearance of the cornea was typical of the condition, it was anæsthetic and there was a risk of superficial ulceration from exposure and cessation of blinking due to anæsthesia.

Entropion.

Dr. Temple Smith also showed a patient on whom he operated for the cure of entropion. A Snellen's operation had been performed on the upper and a Van Millingen on the lower lids.

Obituary.

WILLIAM DAVID OSLER.

THE death of Dr. William David Osler, after a brief illness, occurred at his residence in Lygon Street, Carlton, Victoria, on November 23, 1925.

William David Osler, cousin of the late Sir William Osler, was born in Forfarshire, Scotland, on July 10, 1875. After his preliminary education at the Dundee High School, he proceeded to the Edinburgh University, graduating in medicine in 1896.

Until 1911, when he left for Australia, William Osler engaged in medical practice in Edinburgh, having been an honorary physician in charge of a clinic in the Out-Patient Department of the Edinburgh Royal Infirmary since 1906. The degree of Doctor of Medicine of the Edinburgh Royal Infirmary was conferred upon him in 1910.

On his arrival in Australia William David Osler settled at Willaura, in the district of Ararat, Victoria, where he soon became a very prominent and highly regarded personality by reason of his professional competence and social and civic activities. His conception of the obligations of a doctor in a country town, that he should be not only mentor in matters relating to health, but as a man of University training should take the lead in community life, is well attested by the energy he displayed in all the social movements of his district.

At the time of his death William David Osler was practising in the Melbourne suburb of Carlton whither he had removed from Willaura in 1919.

Of sterling probity and integrity, William Osler at all times displayed a genial and kindly spirit which made him the friend of all classes. He will be especially mourned by the poor of Carlton in taking care of whom he never spared himself. He was a prominent Freemason and a past master in the Masonic order.

A widow but no family survives him.

Congress Notes.

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

IMPORTANT information for those who intend to attend the second session of the Australasian Medical Congress (British Medical Association), Dunedin, 1927, will be published in this journal some time in April. In the same issue a form of application for membership will be found. This form should be filled in, detached and forwarded at once in order to facilitate the work of the Executive Committee.

Correspondence.

DIATHERMY.

SIR: In your editorial retrospect (THE MEDICAL JOURNAL OF AUSTRALIA, January 9, 1926) you make the following statement: "Considerable advance has been registered in the treatment of chronic infections of the cervix uteri by diathermy. This method of applying heat is by no means a new one; many years ago Keating Hart called it fulguration."

May I point out that the use of diathermy for chronic infections of the cervix uteri—chiefly gonococcal—is not fulguration. Cumberbatch (London) and Corbus (America) have each elaborated a technique by which the temperature of the cervical tissues is raised to a degree which can be accurately controlled and kept constant for a length of time judged sufficient to destroy the infecting organism without any destruction of tissue. Fulguration on the other hand means the actual destruction of the tissue under treatment.

Yours, etc.,
J. HOETS.

143, Macquarie Street, Sydney,
January 10, 1926.

CONVALESCENT SERUM IN POLIOMYELITIS.

SIR: The leading article of your journal of January 16 refers to the increased incidence of poliomyelitis in the Commonwealth and to the preparation of serum from convalescents. From your article it appears that the organization involved in the preparation of this serum is an activity of the Commonwealth Health Department. This is a misconception.

The organization in Melbourne was instituted by the Health Committee of the Melbourne City Council. Later,

other metropolitan municipalities with five (5) exceptions joined in the scheme and the expenses incidental to the tracing of "donors" and the preparation of serum are being borne by the metropolitan municipalities in conjunction with the Victorian Government.

For this reason your statement that serum is held in readiness for immediate use in any part of the Commonwealth is misleading.

Serum is only available for cases occurring in the Metropolitan area of Melbourne. It is held for those recognized in the preparalytic or early paralytic stage where the clinical diagnosis is confirmed by the findings on examination of the cerebro-spinal fluid.

The Metropolitan Committee released a small quantity of serum for use in the Royal Alexandra Hospital, Sydney. This was done in response to a most urgent call as supplies of serum in Sydney had not at that time been prepared.

Yours, etc.,

T. W. SINCLAIR, M.D., D.P.H.,

Chairman of Committee for Poliomyelitis and Medical Officer of Health.

Medical Officer of Health's Office,
Town Hall, Melbourne,
January 18, 1926.

THE JOHN IRVINE HUNTER MEMORIAL FUND.

THE following additional subscriptions to the John Irvine Hunter Memorial Fund have been received by the Honorary Treasurers:

	£	s.	d.
Previously acknowledged	1,885	5	3
Dr. R. V. Graham	5	5	0
Dr. T. Farranridge	5	5	0
Dr. Ellen M. Kent Hughes	3	3	6
Dr. G. Bruce White	3	3	0
Dr. Gilmore Wilson	2	3	0
Messrs. David Fell and Company	2	2	0
Dr. Leslie J. Shortland	2	2	0
Dr. Cedric L. Logan	2	2	0
Dr. K. B. Fraser	1	2	0
Dr. Arthur W. D'Ombrain	1	1	0
Theo. Sheehy, Esquire	1	1	0
Mrs. A. Stewart		10	6
	£1,914	5	3

A donation of five hundred dollars has also been received from the Mayo Foundation for Medical Education and Research.

Medical Appointments.

Dr. Whitfield De Witt Henry (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane and the Receiving House, Royal Park, Victoria.

* * * *

Dr. W. Gilbee Brown (B.M.A.) has been appointed Quarantine Officer, Maryborough, Queensland.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xx.

ADELAIDE HOSPITAL, ADELAIDE: Surgical Registrar.

COMMONWEALTH OF AUSTRALIA—ROYAL AUSTRALIAN NAVY: Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C. 1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Ceduna, Wudinna (Central Eyre's Peninsula), Murat Bay and other West Coast of South Australia Districts.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

FEB. 3.—Federal Committee of the British Medical Association in Australia: Meeting at Melbourne.
FEB. 3.—Victorian Branch, B.M.A.: Presentation of Balance Sheet, 1925.
FEB. 4.—South Australian Branch, B.M.A.: Council.
FEB. 9.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 11.—Victorian Branch, B.M.A.: Council.
FEB. 16.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
FEB. 24.—Victorian Branch, B.M.A.: Council.
FEB. 25.—South Australian Branch, B.M.A.: Scientific Meeting.
MAR. 3.—Victorian Branch, B.M.A.: Branch.
MAR. 4.—South Australian Branch, B.M.A.: Council.
MAR. 5.—Queensland Branch, B.M.A.: Branch.
MAR. 11.—Victorian Branch, B.M.A.: Council.
MAR. 12.—Queensland Branch, B.M.A.: Council.
MAR. 24.—Victorian Branch, B.M.A.: Council.
MAR. 25.—South Australian Branch, B.M.A.: Scientific Meeting.
MAR. 26.—Queensland Branch, B.M.A.: Council.

Editorial Notices.

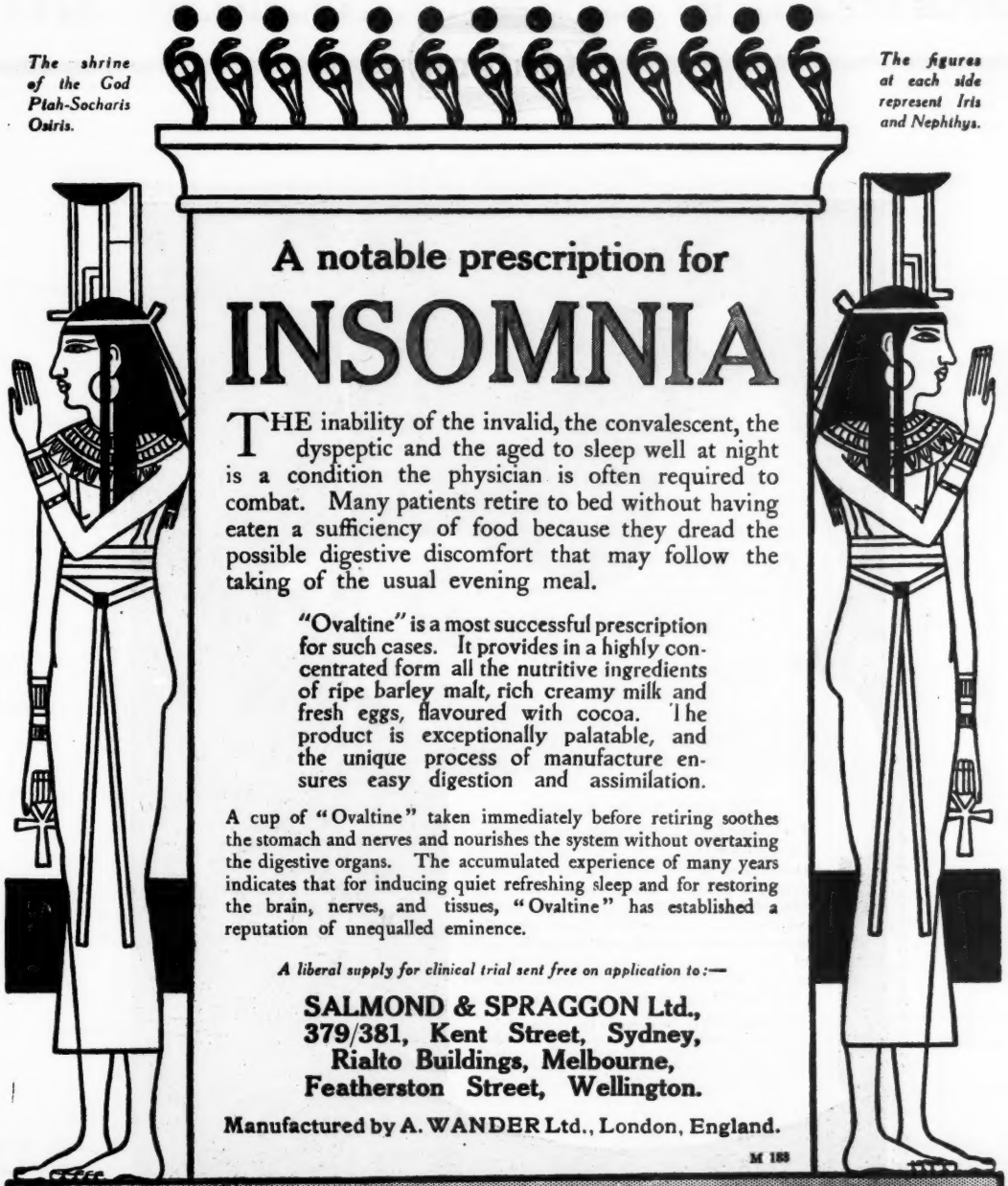
MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.

The shrine of the God Ptah-Socharis Osiris.

The figures at each side represent Iris and Nephthys.



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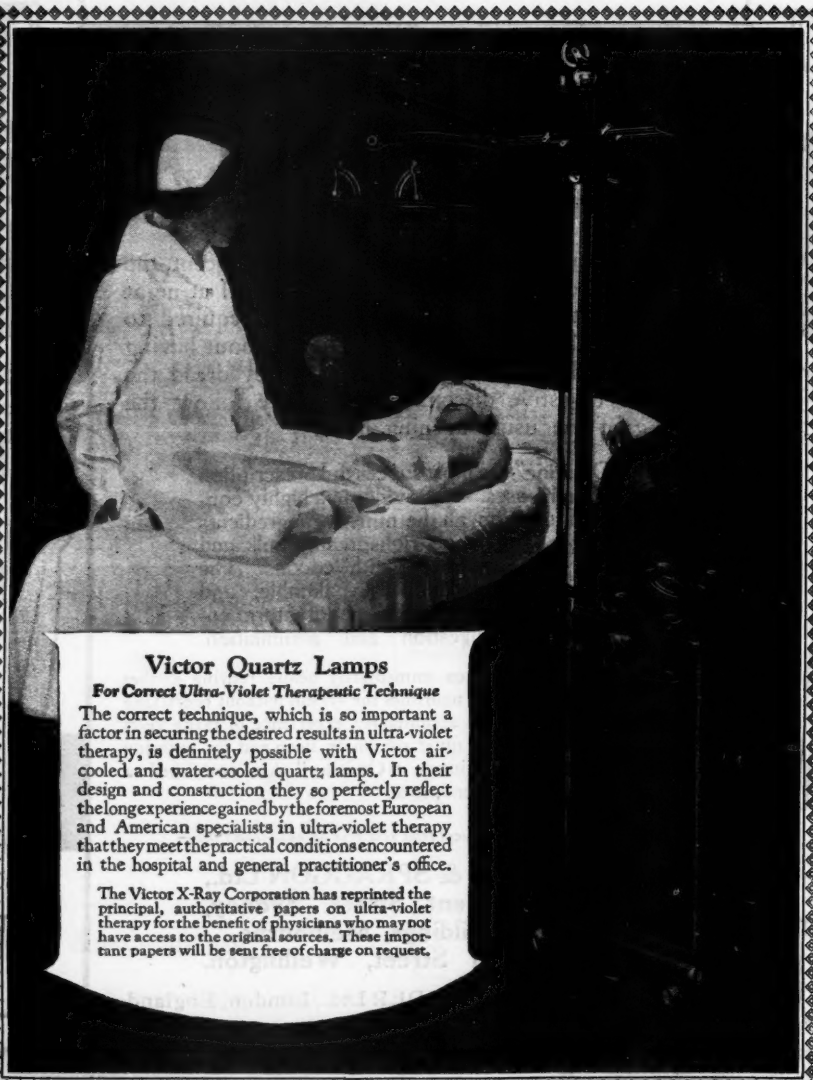

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